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RECORD OF FOUR OBSTETRICAL CASES RECENTLY OCCURRING IN EQUINE PRACTICE.

BY A. E. MACGILLIVRAY, V.S., BANFF, N.B.

THINKING the following cases might be of interest to the profession, three of them showing how easily extreme difficulties may at times be overcome, and the other being of very rare occurrence, I have hastily strung together the annexed remarks.

1. I was called express one night in February last to a mare in foaling. On arriving at the farm, I found the animal very uneasy and straining pretty severely; part of the *decidua* being protruded and hanging down from the vulva. I observed that it appeared to be dead and partly putrid; and, drawing the owner's attention to it, I remarked that the foal was dead, and had likely been so for some time. The mare was over nine months gone with foal.

On exploration, I found a curious state of matters. The withers of the fœtus, with part of the neck and shoulders, were presented and jammed right into the pelvic cavity, while the fœtal head and fore legs, being both turned back, so to speak, were retained in the abdominal cavity. The fœtus presented itself lying on its left side, with its head and fore legs turned to the mare's near flank. Luckily, the mare was very "roomy," and the fœtus, although large, not at full maturity; so that,

with considerable exertion, I got it so far pushed back into the abdominal cavity as allowed the turning round of the head into the pelvis. Having corded the lower jaw, I again pushed back the fœtus, and after not a little trouble I got up first one and then the other fore leg, and then all was soon over.

As the foal was much swollen and emphysematous, I should say it had been nearly a week dead before delivery. With a fully matured fœtus, the above would have proved an extremely difficult presentation.

2. On the evening of the 5th March, I was sent for in a great hurry to attend at a farm in the vicinity of Banff, where a mare had been in foaling all through the afternoon. On my arrival, I found the mare in great distress, sweating profusely, breathing hurriedly, and apparently severely pained. No sign of fœtus or *decidua*, no fulness of vulva, and no discharge of the usual *waters*. The mare's time of foaling was within a week of being fully up.

On exploration, I found a very serious state of matters—in fact, a *transverse* presentation. The body of the foal lay right across the uterus from side to side, the fore part being in the mare's near side flank, and the hind quarters in the off side. All the four extremities were presented, and were well into the pelvis, being within three or four inches of the outside. Failing to discover any traces of a fœtal head, I resolved to push back the four extremities of the foal, and to extract by the hind quarters; but owing to the extremely confined state of the pelvis, and the entire absence of the usual lubricating fluids, this proved to be a rather difficult operation. Having corded both hind legs above the fetlocks, however, and got an assistant with a long and strong, but wiry arm, to push back the fore extremities into the abdomen, I put gentle traction on the cords, and with my own hand and arm inside endeavoured to conduct the hindquarters into a proper position for extraction as proposed. This I at last accomplished; then continuing my assistant's retropulsion of the fore quarters, I put five or six men on to the hind quarter cords, and the *foaling* was over in a few minutes.

The foal in this case had been dead a day or two, and was deformed; the neck being twisted round to the off side, with

the head lying into its own ribs behind the shoulder. It retained this position after delivery. One of the ears was turned right over the "crown of the head," and remained firmly in that position. Owing to the situation of the fœtus *in utero*, it will at once be seen how utterly impossible it was for any one to feel the head, it being twisted right round, and in below the foal's off side ribs.

3. The other evening, the 8th March, I was asked to go as soon as I possibly could to a farm some five miles away, to a mare very "badly in foaling." On arrival, I found the animal in a frightful state. The perspiration was literally pouring off her in every direction, the breathing was greatly excited; the labour pains were excessive, and she was plunging about in the stall to such an extent that it required three men to hold her *In addition to all this*, I found two strong men with bared arms working away like horses, *trying to foal her!* Two legs were protruding from the vulva, with ropes dangling from them, and I was informed that all that was necessary was to get up the head, which they could not do owing to its coming "crown of head-foremost!" I think I will be excused when I say that I did not hesitate long, nor take much time to choose words, in expressing my idea of the doings of the two strong men!

On exploration, I found the fœtal head coming "poll" foremost and well into the pelvic cavity. I endeavoured to alter its position, by pushing back the poll and pulling forward the muzzle, which latter I could easily reach. After trying this two or three times without success, I slipped a cord well on to the upper jaw, and handing this to an assistant, with orders to pull gently, I then pushed with all my strength the foal's "crown of the head" back towards the abdominal cavity, when the muzzle quickly assumed the desired position and soon appeared outside. My two strong friends now thought the case gained, and were for pulling away the fœtus instanter; but I said "not so fast," and ordered a light to be brought nearer, so that I might clear the corded feet of part of the decidual membranes which had been entangled in cording them. In doing this, I discovered that my two friends had got hold of *two hind feet and legs*, instead of fore ones! So that the state of matters was now

worse than ever; the head and two hind extremities of the fœtus being all partially protruding from the vulva. I was excessively irritated by this discovery. However, after renewed exploration, I at once decided to try and return the head and fore quarters, and extract the fœtus per hind quarters. With extreme difficulty this was at last accomplished; I first returned the foal's muzzle to the original position, then got an assistant to push with all his power in the foal's "poll" till he was as far in as he could reach, and finally putting half a dozen men on to the corded hind quarters, very soon the act of foaling was over. The foal had been dead for some time.

In this case I have no doubt certain scientific parties, on finding the dilemma they were in with the hind quarters and head, would have resorted to the *knife* and so got rid of the head or hind quarters; but it must be kept in mind that the patient was a mare, and not an old cow; and I have no hesitation in saying that, if the knife had been used in either of the two latter cases, the life of the mother would have been sacrificed. Mares will not stand any great amount of manipulation during delivery, a mere scratch being often quite sufficient to cause fatal results.

I cannot leave this case without remarking on the extraordinary position in which the foal was when the head and hind extremities were both outside the vulva. As mentioned, I made an exploration inside, and found the fœtus twisted right round and, as it were, folded on itself; so that the knees of the two fore legs (which latter were luckily turned back) were resting on the croup of the fœtus. The mare was nearly ten months pregnant; so that the foal was almost full grown.

4. This was a most peculiar case. (I copy from an "Obstetrical Record" which I keep.) The mare, within two months, had had several attacks of colicky pains, accompanied by complete obstruction of the bowels. During the first attack, she received fourteen drachms of aloes in two doses, and was not purged; but on the third day of the attack she began to pass fæces of a natural consistency. During the second attack, she had ten drachms of aloes in one dose, but no purging followed, merely a return to healthy defecation at the end of thirty-six hours. During the last and fatal attack, she got in two or three doses nine-

teen drachms of aloes, which on the third day produced very mild purgation.

On the evening of the fourth day she was considered nearly convalescent, ate her supper well enough, *but was dead by* 3 *a.m. next day!*

During all three attacks she showed slight straining pains, as if wishing to micturate. This was so evident and so frequent during the last attack, that as she was within a fortnight of foaling, I several times explored, *per vaginam*, to discover if the *os uteri* was in any way relaxed. Nothing of the kind, however. The *os* appeared to be away back at the end of an abnormally long, narrow, and tapering vagina, the far end of which was constricted in a very unnatural degree.

The *post-mortem* inspection disclosed a curious state of matters. The bowels were healthy. The uterus was *completely* twisted round (full *torsion uteri*), and part of the bowel next to the rectum was partially entangled in the twist. The torsion, of course, took place at the cervical and contiguous parts of the uterus, which accounts for the great constriction of the inner portion of the vagina. The torsion was from right to left, and I am confident it was a complete twist.

On slitting up the uterus, the fœtus, enveloped in the placenta, slipped clean out of the cavity, the placenta having altogether lost its hold of the organ. Endometritis to a very serious extent was present, the inner coating of uterus being quite black and disorganized. When the placenta had lost hold of the uterus, the organ did not contract, and owing to the presence of the fœtus, hæmorrhage had taken place, there being a considerable quantity of coagulated blood lying between the placenta and uterus. Death had apparently been caused by the Endometritis, *either directly or indirectly*—the latter, if I mistake not, as the signs of blood poisoning were pretty general throughout the whole system; which blood poisoning had no doubt resulted from absorption of part of the dead material (or diseased products) about the inflamed and disorganized inner uterine coating.

Queries.—Was the torsion brought about during the severe rolling and tumbling which took place during the first colicky

attack? I was *then* told, on my arrival, that she had been "awfully bad, and struggling frightfully."

Also, was not the entanglement of part of the bowel in the torsion the chief cause of the repeated occurrence of obstruction? This entangling of bowel, in such cases, is mentioned in Mr. Fleming's "Veterinary Obstetrics."

PARTURIENT APOPLEXY *(ECLAMPSIA PUERPERALIS*)*:—THE LIGHT THROWN UPON IT BY ITS ANATOMICAL LESIONS.†

BY PROFESSOR FRIEDBERGER, MUNICH VETERINARY SCHOOL.

THE subject of this communication was an eight or nine years old cow, which had been the property of the same owner for several years, and who stated that she had always been in poor condition until about six weeks before calving, when she first began to show signs of improvement. She was receiving clover-hay as food.

The owner was surprised when he entered the cow-shed on October 8th to find the cow had calved.

The animal first showed symptoms of illness on the evening of the 9th, when veterinary advice was sought, and then the diagnosis was "Eclampsia Puerperalis" (Parturient Apoplexy). (I merely remark in passing that nothing was suggested to me about cold being the possible cause.)

After the disease had existed about thirty-six hours, the owner saw that death was fast approaching; so he (according to the veterinary's directions) stabbed the cow, but only about four quarts of blood flowed from the wound.

Thanks to the friendly invitation of my colleague—the attend-

* This is the term used by the Author, but as it has not been introduced into English Veterinary Literature, I have translated it by the more appropriate name of "*Parturient Apoplexy;*" for when we consider the derivation of the word *Eclampsia*, which, according to Dunglison, is "Flashes of light before the eyes" (ἐκλαμψις—from ἐκ—*out* and λάμβω—*I shine*), and that it cannot be proved that the sensation of light flashing before the eyes is present, I fail to see its application. It is also rather an abuse of terms to apply "*puerperalis*" (*puer*—child, *parere*—to bring forth) to our animal patient.—Trans.

† Translated from the *Deutsche Zeitschrift für Thiermedicin* by G. A. B.

ing veterinary surgeon—I had the opportunity of making the autopsy, about eight hours after death, and the following is the result.

The carcase weighed 150 kilo. (roughly, about 300 lbs.); it was not particularly fat, and that which was present had a yellowish-white colour, and was tolerably firm. The muscles were of a brownish-red hue. The blood in the thoracic cavity had firmly coagulated, and was of a liver colour; that which had been exposed to the air was of a bright cherry-colour and coagulated. A large quantity of coarsely masticated food was found in the mouth and fauces, and portions of it had passed through the posterior nares into the nasal chamber. The œsophagus was normal. The rumen and reticulum were normal, and the epithelium firm. The omasum, contrary to rule, was empty; some of its leaves were highly injected, and the epithelium partially swollen, but firmly attached. The abomasum was slightly reddened. The small intestines were dark-red, and presented the appearance peculiar to that of animals which have not been bled, viz.: the veins were tolerably filled with blood. Nothing particular was observed about the mucous membrane. The large intestines were likewise red externally; the contents were fluid, and of a green tint. The mucous membrane was somewhat swollen, but not otherwise altered, except a portion of the posterior part of the colon, which was distinctly hyperæmic and seemed unusually thickly covered with mucus. The rectum contained a quantity of a dark-greenish material, covered with mucus, the surface being tolerably hard, whilst the interior was soft. The liver was small, the colour normal, and consistence firm; it was filled with blood. The gall-bladder contained about ½ litre (1 pint) of brownish-green and strongly fibrinogenous bile. The spleen was normal in size and appearance. The kidneys were natural in size, and yellowish-grey points studded the surface of some of the tubes; when cut it gave a grating sound, and the coloured parts extended in places as far as the tubular portion, thus giving them a remarkable firmness. The bladder contained two litres (2 quarts) of pale yellow-coloured urine, having a watery consistence and alkaline reaction, and distinctly albuminous. The mammæ were well developed, elastic, and full

of milk.* The vaginal mucous membrane was speckled with bright red ecchymoses; otherwise it was pale. The os uteri was almost closed, and was covered with thick clear mucus. The uterus was already considerably contracted. It measured 70 centimètres (27½ inches) from the cervix to the commencement of the cornu, and 30 centimètres (11½ inches) at its greatest diameter. Its muscular coat was thick, and its cavity contained about ⅓ pint of a saffron-yellow strongly fibrinogenous fluid, without a trace of disagreeable odour. The mucous membrane of the os uteri resembled that of the vagina; at the posterior part of the uterus and cornu in which the fœtus had been carried, it had a diffused faintly cyanotic colour; whilst the unoccupied cornu was pale in colour. In the anterior portion of the lately occupied cornu there were some recent hæmorrhagic glomeruli; otherwise nothing conspicuous was seen, either on the mucous membrane of the uterus, or on any other part of the generative organs. The heart was in size, colour, and consistence, normal; the right cavities contained a small quantity of firmly coagulated blood; in the endocardium not a trace of imbibition could be detected, only a long-standing contraction of a portion of the mitral valves, together with the remains of an atheromatous condition of the aorta, were observed. The trachea was covered with a green masticated pulp on its anterior walls, the bronchial tubes being filled with the same kind of matter. The lungs were pale, and completely anæmic in some places; there was vesicular emphysema in others, and indications of Chronic Tuberculosis were present. The bronchial glands were in the last stages of Tuberculosis.

Examination of the cranial cavity:—The head had already been removed from the body. The dura mater was normal; a well-formed blood-coagulum and greyish-yellow fibrinous thrombi were removed from the falciform sinus. The veins at the base of the brain were only partially and incompletely filled with fresh coagula; the fine capillaries of the pia mater, both at the base and on the convexity, were distinctly injected. The convolutions not very well marked. On the right hemisphere

* As the butcher expressed it, "when he took the udder off, a large quantity of milk flowed out."

there were small hæmorrhagic spots; these penetrated about one millimètre into the substance of the brain. The arachnoid space (between the pia and arachnoid membrane) was filled with an "aerated," slightly red fluid, which could have been easily overlooked by a casual observer (*Hydrocephalus externus* mixed with air). The brain itself was broken up and collapsed; when cut into, it appeared extremely anæmic. The grey cortical substance was less strikingly distinguishable from the white, and formed a well-marked contrast with the dirty-red finely-injected surface. *Puncta vasculosa* could not be detected. This high degree of anæmia affected the whole organ in a uniform manner, and gave it a very œdematous appearance. When cut with a knife, however, it did not cling to the blade, as it does in softening of the brain. Nothing abnormal was detected in the ventricles. The choroid plexus was slightly hyperæmic.

From the fact that the animal had been partially bled and the intestines partly removed, we must suppose that the *post-mortem* changes were somewhat modified; yet from the above report of the autopsy, we cannot conceive them (the changes) to be due to putrid infection, for the most striking pathological changes were found in the brain, which one would naturally suppose to be the case, from the symptoms exhibited during life. And if we take into consideration the other data, which stand in unison with this, viz.: the contraction of the uterus, &c., it ratifies and supports the latest conjecture concerning the cause of Parturient Apoplexy (*Eclampsia puerperalis*), viz.: that it is arterial anæmia of the brain. It is obvious how very desirable it would be to obtain opportunities for further investigation, especially in cases of death from the disease; and we should be extremely obliged to any colleagues in the neighbourhood who could help us in this matter.

SCROFULA AND TUBERCULOSIS IN CATTLE.

BY G. GRAY, M.R.C.V.S., BAKEWELL, DERBYSHIRE.

PERHAPS no disorder in the nomenclature of diseases of the bovine tribe deserves more of our attention at the present time than Scrofula. Few authors on cattle pathology have given the

disease more than a passing notice; and, with one or two exceptions, none have touched upon its pathology—a point of great significance to those connected with the carrying out of our sanitary laws, as well as the commonwealth. Why it should have been so neglected by our profession is the more to be wondered at, seeing that the medical profession are not agreed as to the origin of the disease.

I pen the following remarks, not with the view of adding anything new to what is already known with regard to the disease, but simply to chronicle a few facts that have come under my observation. The privileges and advantages often placed within our reach for studying the pathology of the malady, give us opportunities not enjoyed by the medical profession for arriving at the real origin of the disease. Take, for instance, the short space of time required by our subjects to arrive at maturity; indeed, in a period of four or five years an animal may come into existence, arrive at maturity, propagate its kind, and be eventually cut down by the disease. We may have an animal under our eye from the day of its birth until the day of its death; note how it was fed, how it grew and was cared for, and when the first constitutional signs of the disease made their appearance. In a brief space we have the life history of an animal, and the progress of the disease, with its various phases and concomitants, all linked together before our mind's eye, and in such a short period of time as would enable the observant and thoughtful student of medicine to arrive at a more definite conclusion upon the most obscure points of the pathology of this disease. The question as to whether the flesh of animals that are the subjects of this disease is fit for human food is a point not to be so easily settled, and I venture to predict that our senators will soon have to deal with it. As flesh and milk are two staple articles of food in our land, it behoves us to know and to be able to decide whether the milk and flesh of animals that are suffering or have suffered from certain diseases are fit and wholesome articles for human food.

Scrofula has increased very much of late years in nearly all classes of cattle, but more especially in pure bred and dairy stock. By the latter I mean stock on dairy farms only, where they

breed and rear a few heifers, and occasionally a bull, from cows with good dairy qualities, to keep up their stock, etc. We generally find, and, indeed, it is almost a maxim, that where a breeder strives too eagerly after a certain strain, or to gain certain points in breeding, he invariably does so, or may gain his point at a large constitutional expense; in other words, what he may achieve in breeding superior points he will often lose in constitutional stamina. To gain good points and qualities in his stock, he is often tempted to breed-in (from near relatives), or perhaps from an animal with an indifferent constitution, or from one actually suffering from a constitutional disease. Many breeders seem to overlook the great importance of breeding animals with good sound constitutions, as well as form and symmetry.

I have never known a breeder reject animals when suffering from Tuberculosis, so long as they were able to propagate their kind in a marketable form; because he generally disposed of them at an early age and before any signs of the disease had appeared. The disappointments, let alone the losses, experienced by purchasers of pure bred stock, through the indiscretion of breeders, are grievous, and should not be tolerated. Some time ago a case came under my notice, in which a high-bred bull had to be condemned as totally unfit for stud use, owing to this disease assuming a local form which interfered with the act of coition. The animal was accordingly disposed of to a butcher at market value. On being slaughtered, his lungs were found to be full of tubercles.

A year or more after this occurred, I heard the owner's agent deeply regret the loss of the bull, as his stock were coming out uncommonly well, and he thought he might have so far recovered from the disease as to be able to serve a few of their choice cows yearly. However, time proved his stock not to be so good as was at first supposed; for some of them were so far gone with Scrofula before they were many months old, that they had to be disposed of to the butcher to save a dead loss. The breeder of the bull denied that his ancestor had ever suffered from such a disease—a statement which was well known to be not correct in point of fact, and only made to blind the owner.

Breeders strive to keep the existence of the disease secret, if possible, when it has appeared in their herd; whereas, if the truth were put before the public, it would certainly entail a loss to the breeders, but would save the country from much disease. I requested a breeder to furnish me with the pedigrees of certain animals that had succumbed to the disease; he would only grant them on condition that I would not use them in any way publicly.

The worst case of Tuberculosis I ever witnessed in an animal used for stud purposes was in a cow. She had suffered from the disease for years and was much wasted, but, nevertheless, was retained in the stud, until her stock latterly became affected with the disorder when quite young. She was then disposed of to a "slink butcher," and probably palmed off as human food in some of our large towns.

I cite these cases merely to show the unsound principles of some of our fashionable breeders; and so long as they conduct their breeding in such a regardless manner, the disease is not likely to decrease.

Causes.—I have already, in a measure, indicated a salient cause, when commenting on breeders in their eager desire to obtain fine qualities in their stock. The potent causes among pure bred and also dairy stock is in-and-in breeding, and breeding from sires and dams of a strumous diathesis, or from animals suffering from the disease at an advanced stage, a practice which cannot be too strongly condemned. Scrofula may make its appearance at any period of life; young and old are equally liable to its ravages. I believe tubercle may be found in the fœtus at birth, though I have never seen it as early; but I have found it in a calf three months old, and it caused death. I had seen the calf a few times previous to its decease, but did not suspect Scrofula. I looked upon the case as one of indigestion, as it suffered severely from that derangement, with great irregularity of the bowels. I prescribed accordingly, but the creature gradually wasted away and died. I was glad I had the opportunity of making a *post-mortem* examination, as it revealed the mystery. The animal must have suffered a great deal, even at that age; for there were large quantities of

tubercles deposited in the lungs, mediastinum, and liver, with evident traces of peritonitis, as the stomach adhered to several of the adjacent organs.

This unexpected revelation made me inquire carefully into the history of both calf and parents. The calf was a female twin (the other died at birth); the dam was a strong, healthy, cross-bred cow, who was never known to be sick; the sire was a pedigree bull, also healthy—in fact, not a trace of the disease could be found about either sire or dam, and where the calf contracted the malady was a problem yet to solve. The calf had never cohabited with any other animal, but was kept in a pen by itself, with plenty of light and ventilation, and sanitary measures strictly attended to. The idea of its contracting the disease through the milk never occurred to me at the time, nor until I had a letter from Mr. George Fleming in connection with the case I recorded in the January number of THE VETERINARY JOURNAL; and in his letter he called my attention to the milk of diseased animals as a probable cause of communicating the disease. I made further inquiries as to the milk the calf had received. It appears it did not always get its mother's milk, but that from any cow, as it happened. I next examined the cows, and found that not a few of them were suffering from Scrofula. Although the evidence may be considered circumstantial, still, in my opinion, it points rather conclusively to the milk as the cause.

(*To be continued.*)

NOTE BOOK CASES OF RABIES.

BY "CYCLOP."

IN compliance with a request in an Editorial in a recent number of the VETERINARY JOURNAL, I send a few brief notes of all the cases of Rabies which have come under my observation in the county of Durham during the last three years. I regret that in no case has the ascertained previous history of the animal been so accurate or so comprehensive as to indicate satisfactorily the probable time it had been bitten, for I think a

few facts relating to the period of incubation of the disease would prove of as much service as those relating to its prevalence.

Case 1. May 1876, Black and tan terrier. Died.
„ 2. Sept. „ Pointer. Poisoned.
„ 3. „ „ Newfoundland. Poisoned.
„ 4. Aug. 1877, Cross Beagle and Hound. Recovered.
„ 5. Sept. „ Cow. Died.
„ 6. Sept. 1878 Pointer. Poisoned.
„ 7. Nov. „ Retriever. Poisoned.

All the above dogs were affected with the variety known as "Dumb Madness," and the symptoms presented by each were very similar and distinctive. In all of them there was a dull, vacant look, a pendulous lower jaw, an emaciated appearance, an occasional restlessness, and a staggering gait. Some of them had great thirst, and were constantly lapping water; but were apparently unable to swallow any. In others a decided change in the voice was remarked. Cases 3 and 4 deserve especial notice, as illustrating the contagious nature of the disease, and its capability of being occasionally cured. Both cases occurred at the same place, an interval of nearly one year elapsing between them, and both animals had been used as watch dogs and had lived in the same kennel. Case 3 was poisoned after four days' illness. When the owner of the dog was first informed of the malady from which it was suffering, he was incredulous, being thoroughly imbued with some of the popular but erroneous notions as to the complaint. Because the dog obeyed his orders and tried to lap water when placed within its reach, he declared it was not mad; there was only something the matter with its throat, he asserted, and he refused to have it destroyed. However, after four days' doctoring of the dog, he became convinced of the correctness of the diagnosis, and had it destroyed. The dog numbered above as case 4 was purchased a few weeks afterwards, and was kept constantly chained to the kennel which had been occupied by No. 3. In the following year a message was sent requesting my attendance to look at him, as he was affected in the same way as the last dog. On examination I found there was paralysis of the lower jaw, but very little emaciation. The bark was not much changed, the tongue, throat, and cheeks

showed no trace of injury or swelling. He appeared to have much difficulty in getting anything into his mouth, although there was a free use of the tongue. His appetite was not impaired, for some bread and milk was put before him, and he ate it eagerly; but from the condition of the lower jaw, he was a very long time in emptying the dish. I administered an emetic, and it was arranged to chain him up short, and watch him for a few days. For a fortnight there was no alteration in the symptoms, but he then began slowly to recover. He had an occasional dose of laxative medicine, and a stimulating liniment applied externally to the throat.

I copy the following account of the history, symptoms, and *post-mortem* appearances of the cow from my case book. Sept. 12th, saw Mr. —'s black and white cross-bred cow, and got the following particulars. She had been in his possession about seven weeks, and was seven weeks calved. She had been a good feeder and milker, and was in fair condition. When turned out into the field she would rapidly fill herself, then lie down to ruminate, and if there were any whin bushes would pick at them. She had been "bulling" a few days before she was noticed ill, and was first seen to be amiss on the Friday previous (Sept. 7th), when she was observed to "quid" her hay and bellow strangely at intervals of a few minutes. The bellowing was so loud, that he had heard it on one occasion at a distance of a mile and a half.

During the first few days of her illness she was never seen to lie down: when turned out into the field she appeared to be all right, but perhaps a little wild-looking about the eyes. I was told by a neighbour that she had attacked and killed a strange dog passing through the field. She had also attacked a donkey grazing in the same field, but did not hurt him. She refused all food, and had been drenched with gruel, and kept in a loose box.

Symptoms.—She was lying in a loose box with her head towards the door; the eyes were bright and appeared prominent, the pupils were nearly closed; the nose alternately dry and moist; a little ropy saliva was passing from the angles of the mouth, and the mouth itself was warm and clammy, and of a

normal tint. The tongue was also of a natural colour. She bellowed feebly at intervals,—a strange kind of bellowing, in which the sound was made during inspiration as well as expiration, and it almost seemed as if she was trying to imitate the braying of an ass. A tin of water was put before her, into which she dipped her nose, then upset it. The pulse numbered 40, and was weak; the respirations were also slow. A dog was brought into the box, but it did not excite her. Some gruel was administered to her, but there was difficulty in swallowing; the pharynx appeared to be paralysed. She was left for a short time, and on returning was found standing. She looked thin and very hollow; her hair stood on end, and the skin felt dry, hard, and adhering to the ribs. When moved there was no staggering or crossing of the legs, and she walked strongly. She was milked, and gave about three pints. The milk appeared good, and was given to the dog, which lapped it readily. I may add that the dog continues healthy, although it was fed for several days on her milk. She died on the 14th.

Post-mortem examination twelve hours after death:—Rigor mortis well established. Rumen normal, but appeared rather full for an animal that had eaten very little for a week. Reticulum empty. The leaves of the manyplus were reddened; its contents felt firm, and a portion of them dry and hard. Abomasum natural; small intestines slightly reddened in places, and contained some black fluid. Large intestines normal. Liver, spleen, kidneys, bladder, and uterus were normal; lungs healthy; trachea contained some frothy spume, and the mucous membrane of the larynx and fauces was very dark coloured. The heart was healthy. The right ventricle and the arteries were full of black, firmly coagulated blood. The large veins in the extremities were also full of black blood. The brain was smashed into an indistinguishable mass by an ill-directed blow from an axe while endeavouring to remove it, but a quantity—perhaps four or five ounces—of thin, reddish fluid flowed from the cavity. The membranes covering it were reddened.

EMBOLISMUS.

BY JAMES WEBB, M.R.C.V.S., BISHOP'S STORTFORD (LATE V.S. IN THE ROYAL HORSE ARTILLERY).

ON November 16th of this last hunting season, I was requested by a messenger from H. Sworder, Esq., jun., of Stocking Pelham Hall, Herts, to attend a brown gelding, eighteen years of age, a first-rate hunter, and well-known both in Mr. Gosling's and the Essex hunt, having been the property of the present owner since the horse was four years old.

When I arrived I found the animal lying down in a loose box, evidently in great pain. I watched him for some time, then caused him to rise, when I examined his pulse, respirations, mucous membranes, and took his internal and external temperature; but the only circumstance worth mentioning was, that he rested the off hind leg and appeared very lame upon it. On manipulation, this limb felt deathly cold, while the other legs were quite warm. The horse soon sought the recumbent position again. I now made inquiries about him, and found that he had been that day some distance to the hunting meet, and the owner—a remarkably steady, but resolute rider—informed me that after giving the horse a short gallop, he soon noticed that something was wrong; so was compelled to dismount and lead him home, which was no slight task on account of the excessive lameness, and the sweat poured off the horse, testifying to the pain he was suffering. Upon his arrival in the stable he did not care to eat, which was very unusual; he defæcated and micturated all right. I diagnosed the case as Embolism of the right iliac artery, though I never examined it *per rectum*. I explained the nature of the disease to the owner, and told him that I expected it would be a bother to his horse whenever he hunted him. I rubbed some stimulating liniment into the leg, and afterwards loosely flannel-bandaged it; and to mitigate the pain I gave an *injectio morphiæ c. atrophiæ hypodermicæ* and ordered a bran mash diet. The following day he was somewhat better; and about a week afterwards he appeared perfectly well while in the stable, but as soon as he was exercised a few minutes the symptoms alluded to, viz.: inability to move and intense pain

always manifested themselves. Besides, the near hind leg became affected in the same way, which gave me the impression that both right and left iliac arteries were occluded. I administered alkalies daily for six weeks, with the object of trying to dissolve the fibrinous plugs, and had the horse exercised a few minutes each day ; but the disease showed no signs of amelioration, and as the horse was aged, I persuaded the owner to have him destroyed, to which he consented. Upon making a *post-mortem* examination all was revealed that I had stated, and more too ; for the terminal portion of the posterior aorta, the external and internal iliacs, and a considerable portion of their ramifications were more or less occluded. I took a rough sketch of the vessels (a copy of which I enclose), and a portion I brought away and have placed in spirit.

This horse, I may add, was an extraordinary jumper, and I believe that it is not improbable that during the violent contraction, while leaping, of the powerful muscles in which these arteries are embedded, they became injured, causing arteritis and, as a result, an exudation of fibrin from the walls of the arteries. This fibrin, becoming organised, extended until the vessels were occluded with fibrinous plugs. These plugs were of a dark brown colour, hard, and firmly adherent to the inner coat of the vessels, differing from the yellow *ante-mortem* clots which may be drawn out of the vessels proceeding from the heart of horses that succumb to most chest affections.

EMBOLIC NEPHRITIS AND WORM ANEURISM IN THE HORSE.

(*Concluded from page* 180.)

Remarks on the post-mortem examination. (*Epikrisis.*)

A scientific explanation of the errors in diagnosis is purposely omitted, as beside the mark ; and I now first propose to give an interpretation of the case, founded upon the above matters of fact.

The union of the colon to the bladder is traceable to a circumscribed Peritonitis, due to an extension of the inflammation from the fistulous spermatic cord, and therefore caused by the

operation itself. The history received with the case, viz., "that the horse never regained its former liveliness after the operation," quite accords with this view.

As to the pathological changes in the intestines, I was somewhat doubtful if the nodulated cords were veins or lymphatics. This appearance appeared to me to be due to the valves inside the vessels; but in the cœlic veins no such valves have ever been detected. My view, therefore, for a short time (pending a closer examination) was, that it was probably the lymphatics.

The weak point, however, about this view was to be found in the fact that both the large arteries—but not the corresponding veins—could be detected; and, further, the mesenteric glands were quite normal, and some lymphatic vessels which were prepared showed no disease.

I consequently concluded that these rosary-like cords, which took the same course as the artery, were veins affected with thrombi, and that they acquired this peculiar form from the fact that the coagulum became divided into separate portions, due to strong retraction of its fibrous portions. The space between these portions became partially filled with connective tissue, and these new formations, as well as the organization of separate parts of the thrombus, commenced simultaneously from the walls of the vessels.

Microscopically examined, many round cells were detected between the fibres of the connective tissue. In many of these nodular swellings no dense tissue was present, but, on the contrary, more of a caseous substance, similar to that found in the above-mentioned tumour in the neighbourhood of the anterior mesenteric artery.

I consider this, as well as the sac which was connected with the colon, originally to be thrombosed veins, which had undergone caseous degeneration, and produced extensive new formations and softening processes. The above-described sac (25 centimeters long and broad) must be looked upon as a product of these processes.

I am further of opinion that some of the contents of this sac passed into the cavity of the colon, and that the ingestæ of the colon, in their turn, passed into it:

On the other hand, one might consider the opening in the colon, and the escape of the ingesta between the layers of the cœlic mesentery, as the primary, and the formation of the sac as a secondary consequence; but this extremly doubtful, because, first: it is rather singular that such a rupture should take place in the thickest part of the intestine, where the meso-colon is attached; further, its contents were similar to those of the tumour near the anterior mesenteric artery. Since the connection between this swelling and the nodulated veins could be traced, also that the walls of all these cavities, as already stated, presented the same appearance, we must conclude their origin to be similar. I accept, in support of the preceding discussion, that coagulation took place in the two cœlic veins, due to some doubtful disturbance in the circulation (probably arterial worm-thrombi); and, consequently, these venous thrombi became partly organized, and partly purulently or caseously degenerated. An ulcerated process accompanied these changes, which caused extensive degeneration, and simultaneously led to the formation of the connective tissue by which they became encapsuled.

The above-mentioned sac was formed in the same way, and emptied its caseous contents into the intestine, after destruction of the walls of that viscus. That such patho-anatomical changes must have injured the digestive and assimilative functions of the large intestines requires no further proof.

If we also take the union of the bladder and the colon into consideration, we can easily account for the periodical abdominal pains; for when the intestine was filled with ingesta at this point, it must have caused tension of the bladder, and consequently pain.

The abnormally distended ureter can also be accounted for from the fact that, when the bladder was put on the stretch, its walls must necessarily have been tightened, and would therefore present an obstacle to the flow of urine from the ureter into the bladder.

The repeated appearance of Metastatic Pneumonia is interesting, especially as we were able, during life, to fix the diagnosis with tolerable certainty by means of percussion. We

learn from this, that in animals in poor condition, and with thin thoracic walls, a dull sound is given upon percussion over the seat of Lobular Pneumonia. The point at which the Pneumonia commenced could not be determined at the autopsy.

It is especially remarkable, that almost regularly a day before the appearance of the symptoms of Pneumonia the temperature rose. This is best seen by referring to July 1, 2, 3, and 5, and 6, and particularly on July 7 and 8.

Although we must allow that the discovery which serves as the basis for the foregoing remarks may certainly claim a high interest; yet, considered from a scientific point of view, the explanation of the patho-anatomical change of the urinary apparatus is very unsatisfactory.

With regard to the continual abnormal condition of the urine, one will find an explanation, because especial attention was paid to the *post-mortem* changes of the urinary organs. At first sight the alterations in the kidneys were attributed to embolism, and the heart was searched for thrombus, as this is generally considered the starting point of embolical processes in the kidneys. The aorta was then opened, and the worm-aneurism in the anterior mesenteric artery was seen; yet I was not inclined to attribute this to be the cause of the disease in the kidneys.

I had abandoned the hope of discovering anything satisfactory, and had only the renal arteries to open, when I found a worm-aneurism in both arteries, with thrombi partly degenerated and containing an imprisoned *Strongylus*.

It is quite clear that the thrombi in the renal arteries produced the material for the embolic points in the kidneys, and caused the Embolic Nephritis.

Another question which now presented itself was: Did the albuminuria, and especially the morphological or cell parts of the urine, stand in any relation to the renal emboli?

When emboli are localised, the vessels of the parts are, as a rule, torn; if not, they are always exposed to high blood-pressure, and therefore permit a large quantity of albuminous blood-serum to transude into the renal canals—thus accounting for the albumen in the urine.

The cell elements, on the other hand, one might attribute to

the bladder. I was inclined to this view myself, until I examined the urine contained in the ureters. But seeing that this also had the same elements in it as the urine of the bladder and that voided by the living animal, it became clear that these cells should be considered products of the embolical process, that they were mixed in the urine of the kidney, and must also be a diagnostic sign of this disease.

The horse did not die in consequence of the chronic Colic, but from loss of albuminous matter, due to the disease in the kidney, causing great exhaustion, although the appetite was generally good.

This case has induced me to examine the urine more diligently than I had hitherto done, although I have always paid attention to it.

My experience enables me to communicate the three following cases of affection of the kidneys.

CASE I.—WORM-ANEURISM IN THE AORTA ANTERIOR TO THE ORIGIN OF THE RENAL ARTERIES, AND EMBOLIC NEPHRITIS.

On Nov. 3, 1874, Herr Steinhoff, of Celle, sent for treatment to the Hanover Veterinary School, a horse suffering from ichorous Broncho-Pneumonia, which was declared as incurable.

On examining the urine, albumen and cells were detected. This caused me to beg Director Günther to buy the animal in order to make an autopsy of it; as the gentleman said he should send it to the Zoological Gardens to be killed, after the unfavourable report that I had given him of the case.

My wish was promptly gratified, and this gave me the opportunity of giving the following report of the *post-mortem* examination, which was made the following day.

The posterior aorta, immediately anterior to the origin of the renal arteries, was aneurismally distended, half the enlarged part being calcified; the other half was found to contain a grey degenerating thrombus about the size of a hazel nut, accompanied by a strongle. One of the renal arteries contained a soft red coagulum.

Both renal arteries presented many places, varying in size from a pea to a hazel nut, dark red in colour, and of an irregular

stellate form; also cicatrized contractions, which on one side appeared as greyish-white cords surrounded by dark-red borders, and on the other of a greyish-red condition, the traces of which could in most cases be followed into the substance of the kidney.

CASE II.—WORM-ANEURISM OF BOTH RENAL ARTERIES, ACCOMPANIED WITH EMBOLIC NEPHRITIS.

I examined the urine of a horse on the 7th of December, 1874, immediately after death, and found it to be of an orange colour, flocculent, turbid, filamentous, and alkaline, with a sp. gr. of 1040 at 11° R. (13·7° C.); it was strongly albuminous, and cells could be now and then detected.

Both the renal arteries contained worm-thrombi, in one of which a strongle was found imbedded. These degenerating thrombi were immediately related to a similar thrombus in the posterior aorta, and therefore should be considered as a continuation of it.

CASE III.—WORM-ANEURISM IN THE POSTERIOR AORTA, AT THE POINT WHERE THE ANTERIOR MESENTERIC ARTERY IS GIVEN OFF; WITH EMBOLIC NEPHRITIS.

This horse had (like the one above-mentioned) Pleuritis artificially (metastatically) produced. The urine presented the following characters:—

December 12th, 1874. Reddish-yellow colour, turbid, non-filamentous, alkaline. Sp. gr. 1050 at 5° R. (6·3° C.); it contained crystals of calcium carbonate and oxalate, but not cells.

14th. Dirty yellow, turbid, filamentous, alkaline. Sp. gr. 1048 at 10° R.; albuminous, and a few epithelial cells.

17th. Urine taken from the bladder as soon as possible after bleeding the horse to death:—Yellow, turbid, albuminous, and numerous round and epithelial cells.

Result.—Kidneys resembled those described above. In the renal arteries newly-formed thrombi were found. The posterior aorta was rough, thickened, and fissured in the neighbourhood of the origin of the anterior mesenteric artery, and contained an old and partially-degenerated thrombus.

The two last mentioned horses were very poor and emaciated, although they had had a keen appetite.

In conclusion, the following may be entitled to a fourth place, as it is highly remarkable :—

Herr Haarstick, Department Veterinary Surgeon of Hildesheim, sent a preparation of the left renal artery and posterior aorta, with the following observations :—The *aorta abdominalis* and all its small branches were nearly completely obstructed by a thrombus, which commenced where the anterior mesenteric artery arises, and ended at the external iliac. From the anterior part of the thrombus a tapering projection commenced, which extended as far forwards as the thoracic portion. The right kidney presented the same pathological changes as the left.

The preparation was taken from a six months old foal, which was attacked with acute Rheumatism at the commencement of October, and by the fourth day of its illness a large quantity of a yellow exudate had collected in the anterior chamber of the eye. Within fourteen days the animal became convalescent; there remaining only a slight weakness of the loins, and the pulse remained small and intermittent.

The animal only refused its food about three days before death. It often pawed and looked round towards its flank, and about two hours before death the symptoms of Colic increased, the abdomen became tympanitic, and death closed the scene.

I have only to add that the thrombus in the posterior aorta in places presented many layers, which gradually changed from a white, firm, fibrous condition into first grey, then greyish-red, and finally red layers, each layer also varying in density and consistence.

The left kidney, which was sent, weighed 2,060 grammes (about sixty-nine ounces); it was very much congested and enlarged, and of a soft, in parts pulpy, condition.

Upon cutting it, the surface presented various-sized patches infiltrated with blood, the parenchyma being quite softened, as if destroyed. The glomeruli were raised from the dark red groundwork, as submiliary yellow-grey solid nodules.

The renal arteries were cut open, and the two principal

branches were found to be completely obstructed by greyish-red and tolerably firm thrombi, from which soft coaguli could be traced to the small arteries. The veins were much enlarged, and filled with dark red, soft, but yet coherent masses of blood.

Embolic Nephritis can be recognized by the patho-anatomical changes; but as far as I know, nothing is known of the symptoms and diagnosis of this morbid condition.

With regard to its patho-anatomical characters, the following preparations from horses, and which may be considered to relate to the above disease, are preserved in the pathological collection at the Vienna Veterinary Institute.

No. 1315, Renal abscess. No. 1370, Granular kidney. Nos. 1410 and 2180, Renal metastasis. Nos. 2216, Pyæmic Nephritis. No. 1852, *Aneurism of the renal artery.* No. 340, 341, 805, 2312, 1732, 1583, 1568, 1435, 2401, 2461, 2532, Aneurism of the posterior aorta. No. 2371, Thrombus in the *aorta abdominalis.* Besides, these, Bollinger in his work on Colic in the horse ("Die Kolik der Pferde," &c.), says that out of 168 aneurisms affecting 100 horses, three were found to attack the renal artery.

Bruckmüller, to whose diligence the valuable patho-anatomical collection at Vienna is due, mentions in his "Lehrbuch der Pathologischen Zootomie," p. 645, that the thrombi formations (*Pfropfbildung*) in the renal artery are usually accompanied by purulent infiltrations of the kidney. But he does not point out that this thrombus formation is essentially the cause of the renal affection.

There is a striking resemblance between the last case described in this paper and that described by Bruckmüller, pp. 643, 644, under the title of Nephritis.

Bruckmüller says that this Nephritis is accompanied by rheumatic inflammation of the muscles of the posterior part of the body. In our case, the animal suffered from Acute Rheumatism, which was followed by weakness in the loins.

It must also be granted that Haubner's "Nephritis" and "Spinitis" (*Nieren und Ruckenmarks Entzündung*) undoubtedly admit of a close comparison with our case.

As our knowledge of the vascular system increases, so many descriptions of such diseases, which had the appearance of truth, become obsolete, owing to the unsoundness of their physiological basis.

Bruckmüller describes (at p. 648) the first stages of the embolic centres tolerably accurately. He says, with truth, that renal metastasis in horses is most frequent after pneumonic metastasis, and that it is caused by ichorous Pneumonia, Endocarditis, and thrombi in the posterior aorta. Talking of the course of these metastasis, he says:—It is seldom that the products of inflammation become dessicated, become caseous, and form white or yellow nodules; but that more frequently a large abscess is formed, filled with a yellow pus, over which the renal capsule thickens.

He says nothing of the formation of embolic cicatrices, which doubtless are the most frequent result of Embolic Nephritis, or renal metastasis—which are one and the same thing.

He has, however, partly described the embolic cicatrix very well, under the head of Granular Kidney (*Nieren-granulation*), at p. 646, but says it is the second stage, or the higher development of chronic Nephritis.

At present I know of no other chronic Nephritis than that caused by metastasis, which leads either to embolic cicatrices or to the formation of purulent abscess, or, perhaps, to ichorous cavities.

According to my apprehension, the six forms of Nephritis which are described by Bruckmüller, viz.:—

(*a*) Acute Nephritis (which resembles that described as the 4th case in this paper);

(*b*) Purulent infiltration of the kidney;

(*c*) Chronic Nephritis;

(*d*) Renal granulation;

(*e*) Renal abscess;

(*f*) Renal metastasis;

may all be said primarily to take their origin from vessels which were affected with thrombus or embolism.

Klebs writes very beautifully and appropriately in his "Handbuch der pathologischen Anatomie," p. 649, upon Embolic Ne-

phritis, and particularly on renal infarct, which he also terms "Nephritis-embolica-arterialis," in contradistinction to a disease which was first described by Virchow and Beckmann, under the name of "Capillary Embolism of the Kidney," in man.

The processes described by Klebs I am quite willing to accept, from the fact that the same processes occurred in the cases above described, and therefore I refer the reader to the chapter on this subject in the handbook above mentioned.

It has been known for a long time that the kidneys are a favourite organ for the deposition of emboli. Renal emboli owe their origin to the processes arising from thrombi in the pulmonary veins, left side of heart, and posterior aorta, as far as the origin of the renal arteries. We also know that, besides the kidneys, the spleen is in like manner often affected with infarcts. If we simultaneously find emboli in the spleen as well as in the kidneys, we may with the greatest confidence conclude that their primary seat was anterior to the origin of the *arteria cœliaca;* if, on the other hand, metastatic emboli are absent in the spleen, although present in the kidneys, we may conclude that the thrombus was situated in some part of the aorta posterior to the cœliac artery, or in the renal arteries themselves; for in this part of the aorta the anterior mesenteric artery, which is the favourite seat for Worm-aneurism, takes its rise; and, as we have seen above, the walls of the aorta and the renal arteries often partake in the process; and when we find isolated centres of embolism in the kidneys, we may presume, with tolerable correctness, that its origin was Worm-thrombus, situated either in the *aorta abdominalis* or renal arteries.

As for the symptomatology of metastastic Nephritis, nothing is known. In human medicine as little is known as to the diagnosis of this disease.

Niemeyer says in his manual (*Lehrbuch:* 8. Auflag, 2. Band, s. 36), that the metastatic form of interstitial Nephritis is generally overlooked during life, for there is no characteristic symptom by which it may be detected.

Vogel also says in his work on diseases of the kidney, published in Virchow's *Handbuch der speciellen Pathologie und Therapie:* vi. Band, ii. Abtheilung, s. 675, that in pyæmic

Nephritis no characteristic change in the urine is to be observed. He also says that the urine sometimes contains albumen, but never in large quantities. At other times it is only temporarily present, and in others it is quite absent. It may seldom contain cylinders or blood. Sometimes the urine is scanty, and in new cases there is no secretion at all. In some cases there is pain in the region of the kidneys; in others it is wanting.

From this it may be inferred that there are no trustworthy symptoms on which the diagnosis of metastatic Nephritis in man can be based; hence it happens the renal affections in the human subject play a subordinate part in medical literature to those caused by pyæmia. It is quite different in the case of the horse.

It appears to me that these metastatic inflammations of the kidney in the horse are of the greatest practical importance, because their frequency is in direct proportion to that of Worm-aneurism; and because, also, according to all the cases I have hitherto observed, they often cause much derangement of the digestive organs, and even death. Accordingly, cases of Embolic Nephritis may occur without being accompanied by general pyæmic processes, as is the rule in the human subject.

As regards the symptoms in the horse, I have neither found uriniferous cylinders nor blood, but albumen, and round and epithelial cells. From these facts I consider that we shall be justified in assuming that these symptoms are diagnostic of Embolic Nephritis in the horse, until further examination proves the contrary.

This diagnosis is supported by the fact, that up to the present, so far as I am aware, we have no scientific evidence of the existence of Bright's disease—diffused parenchymatous Nephritis—in the horse. I particularly wish it to be understood that I do not say that Bright's disease does not occur in horses, but that, as far as my knowledge is concerned, no proof of its occurrence has been hitherto offered.

From what we know of the patho-anatomical changes of Embolic Nephritis, we are certain that it may be either of a transitory or a chronic character, depending upon the nature of the thrombus processes in the vessels, *i.e.*, whether they run their course

rapidly or are of a permanent nature. In the first case, the Nephritis would be without effect, and followed by recovery; on the other hand, the second condition would lead to loss of albuminous matter and disturbances in the assimilative processes. I found that all four of the cases above described wasted to skeletons, although two of them had a good appetite during their illness.

The prognosis is, therefore, uncertain, and dependent upon the course of the disease.

From the foregoing it will be seen that dangerous and violent diseases of the vessels, as well as mild transitory formations of thrombi, can cause this form of Nephritis.

The circumstance that in a large number of cases this Nephritis, as well as Embolic Colic, have the same cause, viz., Worm-thrombi, leads me to the following conclusions:—It is a known fact that the urine often contains albumen in patients suffering from Colic, and as an explanation of this, it has always been said that it was due to an abnormal stasis of the blood in the renal vessels. I have often found round and epithelial cells in the urine, as well as albumen; and I am of opinion that in many cases of Embolic Colic we also have Embolic Nephritis going on at the same time, and that the presence of the last is an aid to the diagnosis of the first. The logical correctness of this conclusion cannot be disputed; but, whether it will be proved correct in fact, future experience must determine.

The treatment of Embolic Nephritis is undoubtedly to be based on those means which prevent the formation and check the organization and consolidation of thrombi, and those which favour their disintegration.

It is evident that an equable and low blood-pressure is favourable to the adherence of thrombi to the walls of the vessel; but a rapid circulation, with high blood-pressure, is more likely to carry portions of the thrombus away in the current, and thereby favour the processes of embolism. Hence, since movement (exercise) increases the circulation, it would be advisable to keep the patient as quiet as possible.

As far as the administration of medicine is concerned, in some cases I have used tannin, yet I have not arrived at any satisfactory conclusion as to its action.

In conclusion, I may remark that I have to-day, and for some days past, found fatty metamorphosed fibrin-cylinders in the urine of a horse which Director Günther has had the kindness to purchase for the Institute, in order that I may be able to extend my examinations, and I shall not fail to communicate the results to my readers at some future period.

Editorial.

VETERINARY SCIENCE IN THE UNITED STATES.

It is somewhat strange that the Americans should have so greatly neglected Veterinary Science, and that in this respect they should have so closely followed the example set them by this country, seeing, as they must have done, the terrible destruction preventable animal diseases had brought upon our flocks and herds, owing to our own utter indifference, and also the fact that we had been instrumental in conveying some of these scourges to nearly every part of the world, where their ravages have been even more serious than here. America must have seen and known all this; nay, she was conscious that at least one of these maladies had been carried from us into her own cowsheds and pastures, and was smouldering and slowly spreading there, only waiting the opportunity to blaze rapidly over every State. Not only this, but every year other animal plagues—either exotic or native—were becoming more serious and widespread, and one of them alone—Swine Plague—threatens to destroy her porcine tribe; while another, Trichinosis, is not only assuming alarming proportions, and menacing the health of her own human population, but will eventually lead to a considerable diminution in, if not to an entire suppression of, her large export trade in swine flesh.

The existence of such diseases as Glanders among her horses will also doubtless tend to injure her trade in these animals—very many of which are sent to Europe every year; and as they are received chiefly because they are cheaper than the ordinary run of horses in this country, they are the more likely, as these horses are, to be infected. If the reports are true as to the condition of her cowsheds, even in the chief cities of the States, and if Tuberculosis be as rife among the cows as is represented, not only must her own populations be exposed to great peril, but so must those who consume the products of these animals on this side of the Atlantic—peril which will soon be recognised, and must lead to a refusal of these products.

Already, and for the first time, America has begun to experience in an unmistakable manner what it is to neglect the teachings of Veterinary Sanitary Science; and though it took this country thirty years to learn the lesson—chiefly because there was no one to point it out to her—yet we can scarcely doubt that the United States Government will not

be so slow to learn, now that a most important branch of trade is so seriously checked by unpardonable indifference to the recognition of a science, the utility of which has long been justly estimated on the Continent, and is beginning to be felt among ourselves—almost the last to acknowledge it.

We have frequently stated that the Anglo-Saxon race has been slow to recognise this Science, and the proofs in favour of our assertion are numerous. It has no home among us even now, notwithstanding the terrible disasters our indifference to it has inflicted upon us, and will still entail; and in the meanest and smallest of the European States it holds a higher position than it does in Britain. We need not allude to the causes for this—they are not far to seek.

In America we should certainly have expected something better than at present holds. She had the painful experience and the bitter lessons of this country before her, and she has shown that in other matters she could profit by such example. Not only this, but from among the small number of excellent Veterinarians she possesses, warning voices have been earnestly raised on her behalf, and the danger she was incurring has been indicated in prophetic words which have already been proved to be only too true. To select one instance out of many, we may note what Veterinary Surgeon Cressy has written in his "Fourth Annual Report on the Diseases of Domestic Animals in Connecticut," published in 1875, and which now lies before us:—"The increase and sudden invasions of disease among our stock of late years should awaken new zeal in every farmer, and also admonish the whole people of the necessity of having a vigilant commission in every State, and authorized to act in every emergency. There should be no curtailing of its power. Its action should be final in every case and under all existing circumstances. The public must first be served. Its demands are absolute, and in the well-being of the greatest number the rights of individuals should never interfere. The want of such an organized force has cost this country thousands of dollars on every occasion. In 1860, Massachussets suffered in an extreme degree for want of competent authority at the commencement of the attack the year previous, to decide the nature of that contagious pestilence which afterwards proved to be the dreaded Pleuropneumonia late from its native haunts in Holland. This fresh and unexpected outbreak of the Lung Plague forcibly illustrates the great liability of its recurrence in almost any portion of the United States, from the importation of foreign stock at the present time. And so long as our coast is allowed to remain exposed to the commerce of the world without a veterinary surgeon at every port, it is purely a matter of chance whether or not we suffer from the malignant diseases of other lands." In this excellent report we have also a good description of an outbreak of Lung Plague, the contagion of which was imported from New York to Connecticut the previous summer.

With all this experience and all this evidence, the United States will surely now give some attention to Veterinary Science. At present the States are the very paradise of quacks and impostors of every kind, and nothing is done by the Government to encourage the study of animal

medicine by competent, well-educated men. Such neglect is not only something of a national disgrace, it must lead—as it has so often led in this country—to national disaster, not once, but many times.

With her enterprise, her well-known advanced views as to education and general science, and the high position human medicine is already assuming in the States, it would indeed be a matter for serious regret and censure if the American Government longer delayed establishing well-organized veterinary schools, and fostering a science which none but governments utterly blind to their own material interests now ignore. With her immense and rapidly increasing animal wealth, so necessary for her present and future progress, it is quite unaccountable that America should quite neglect the science that alone can protect and enhance that wealth. Besides, the claims of animals to protection from disease, pain, and mismanagement should surely weigh for something with a people so distinguished for their humanity! These claims come well within the purview of Veterinary Science.

A NEW VEGETABLE PARASITE CAUSING DISEASE IN CATTLE.

In the "Notes and News" which appeared in the VETERINARY JOURNAL for January last, allusion was made to Sarcoma in oxen, and the opinion given by the veterinary professor, Perroncito, of Turin, with regard to the presence of a vegetable parasite in that malady. In publishing that note, we forgot that we had not referred to the valuable contribution to veterinary science upon which Perroncito's remarks were founded. We now gladly do so, and ask our readers to consider the Turinese professor's criticisms as an appendix to what we state.

In the *Centralblatt für die Med. Wissenschaften* for 1877 (No. 27), and the *Deutsche Zeitschrift für Thiermedicin* for the same year, Professor Bollinger, of the Munich Veterinary School, under the heading "Ueber eine neue Pilzkrankheit beim Rinde" ("On a New Fungus Disease in Cattle"), draws attention to a disease which occurs in the upper and lower jaws of bovines, commencing towards the alveolæ of the posterior molars or in the spongy texture of the bones, and extending to the soft tissues. The disease essentially consists in a new formation or neoplasm, which produces osteoporosis in the interior of the bone, and externally hyperostosis; finally involving the gums, cheeks, tongue, and other soft textures, and giving rise to swellings, abscesses, and caries, with general loss of condition, until at length the cattle die either of emaciation and debility, or have to be slaughtered.

The disease is greatly dreaded by graziers, who give it several significant names; while among veterinarians it has received such technical designations as "Osteosarcoma," "Spina Ventosa," "Bone Tuberculosis," "Chronic Ostitis," "Cancer of Bone," etc.

It usually forms swellings on or in the tongue, and these result in erosions of the mucous membrane, and partial atrophy of the muscles, until at last the organ swells to a great size, and assumes a perfectly wood-like hardness. The lymphatic glands of the tongue and upper part of the neck, throat, larynx, and mucous membrane of the stomach are likewise implicated at a later period. The swellings are about the size of a walnut or an egg, soft in consistence, of a dull yellow colour, and juicy exterior.

All this serious disturbance is produced by a fungus allied in many respects to the common green mould *(Penicillium glaucum)* which grows on jam, paste, damp leather, etc., and therefore very far from being one of the lowest of the group to which it belongs. The individual plant consists of a conical mass of branched filaments, springing from a single cell, and bearing on their short terminal branchlets the spores, or *Conidia*, by which the mould is reproduced. Often a number of these plants are united together in the form of a mulberry-like mass, visible to the naked eye as a minute granule of a dirty white colour. Hars has given the name of *Actinomyces bovis* to this mould, and the disease to which it gives rise is hence designated by Bollinger *Actinomykosis*. His observations are not altogether satisfactory, inasmuch as they are not complete; for all his attempts at artificial culture of *Actinomyces* entirely failed, as did also efforts to inoculate a calf's tongue with fluids containing the fungus. And as we reported in No. 1 of the journal for this year (p. 60), Professor Perroncito, of the Turin Veterinary School, while agreeing with Bollinger as to the frequent occurrence of the fungus in question yet entertains serious doubts as to whether it is really the active cause of the disease in cattle; basing his reasons for doubting on the following facts: (1) Because Sarcomata are frequently met with in which *Actinomyces bovis* cannot be found; (2) On the presence of ulcers and fistulous tracts opening exteriorly, or communicating with natural cavities, which can thus be put in communication with the external air; and (3) On the negative results that have attended the inoculation of animals with fresh matter containing the fungus which is supposed to give rise to the disease.

THE HORSE-SICKNESS OF SOUTH AFRICA.

As everything relating to affairs in South Africa is now receiving the closest attention, possessing, as they do at present, the greatest importance in the history of our Colonial empire, no apology is needed for again alluding to the very grave malady known all over that portion of the African Continent as the Horse-sickness, and which so seriously threatens the material prosperity of part of the world. We are more especially induced to refer to it again, from the circumstance that the troops recently sent with their horses from this country will arrive towards the end of the season during which it is most prevalent, and may consequently suffer loss from its ravages at a critical period.

Letters lately received show that it is as widespread and fatal as usual. One correspondent at Algoa Bay, in a letter dated January 31st, writes:—"I am sorry to say that Horse-sickness is prevalent in parts of the colony, one miner at Kimberley having lost twenty animals in a week recently. The secret of this fatal disease still baffles veterinary science, and the victims rapidly succumb to its attacks." Notwithstanding all the evidence we are able to gather concerning it, we are yet far from being satisfied as to its nature or etiology. We hope, however, to be in supplied—before long—with abundant materials for elucidating the obscure points with regard to it. One question in connection with its etiology we should like answered, and that is whether during the "Horse-sickness" season other animals—as cattle and sheep—suffer from anthracic disorders; which we should suppose to be the case if this horse disease is Anthrax.

The authorities from which we are about to quote are the most recent who have commented on the malady: the first being Mr. Aylward, Commandant of the Transvaal Republic, and late Captain of the Lydenberg Volunteers,

who has just written a work entitled "The Transvaal of To-day;" and from it we make the following extracts.

Speaking of the Transvaal as a grazing country, Captain Aylward writes (page 166):—

"Herds, except under the most favourable circumstances do not seem to increase in anything like a fair ratio. The stocks of most farmers, apart from wars and other exceptional causes, have not permanently yielded even the natural increase—much less that which might have been expected in a country which has not been subject to the desolating droughts that have so frequently decimated the herds of the other colonies. I have asked the question point-blank of many farmers, 'What increase have you to show in your breeding-cattle for the last ten years?' The answer has almost invariably been, 'No increase.' This is generally attributed to 'calf-sickness' and 'lung-sickness,' which has proved fatal to seven out of ten of the breeding-cattle and young ones, on an average of years in most districts.

"Only the better portions of the Highveld are free all the year round from 'Horse-sickness.' With the exception of New Scotland and Wakkerstroom, the Transvaal is not in any sense a horse-breeding country, and the horses bred in these districts, it must always be remembered, are as liable to perish of the disease called 'Horse-sickness,' when they are exposed to its influence in the Bushveld and low-lying divisions, as if they were foreign or imported stock. Sheep can hardly as yet be said to have had a fair trial, it being only within recent years that the value of the Highveld, as a sheep-walk, has revealed itself.

"I have consulted a friend—Mr. Cornelius Van der Berg, residing near Standerton, on the subject. He, with a number of relatives and friends, migrated from the County Weenen in Natal, to the Transvaal Highveld, in the beginning of the winter of 1870. He himself became the purchaser of two farms, one pasture, and the other a winter farm of considerable extent on the Pongola river. These he stocked with 170 head of cattle, 17 breeding mares, and 750 ewes, all in good condition. He had also with him a considerable number of Angora goats. The result of his settlement is that he has lost 30 per cent. of the cattle, all the horses, all the goats, but gained in eight years 45 per cent. on sheep. The experience of all those who accompanied him is, with one exception, nearly similar."

At page 220, Captain Aylward writes:—"There is in Africa, and especially in the Transvaal, a close season, when the penalty for descending into the Bushveld in search of large game, or of penetrating to the north, into the remoter grounds of the elephant-hunter, is not a fine of five or ten pounds, but the almost certain exposure of the traveller to fever and death. This season may generally be said to include the latter half of the spring, the whole of the summer, and not only the whole of the autumn, but also a few of the first days of winter. This sickly and dangerous season includes from the 1st of September to the 25th of May in nearly every year. It is in the Bushveld and low country not only a period of general unhealthiness and danger to man, but is also that during which the constant prevalence of 'Horse-sickness' adds to the danger, expense, and difficulty of the hunter. During, on the other hand, the whole of the actual winter, but little fear of either fever or 'Horse-sickness' need be entertained anywhere, save in the less distant, and less shot-over districts north of the Limpopo, of which I know nothing but from hearsay."

Describing certain rules laid down for the guidance of a number of gentlemen who arrived in Pretoria in December, 1877, and referring to "Horse-sickness" (page 221), the author states: "They were told, at the same time, that unless they purchased what are called 'salted horses,' that is, animals which had recovered from the disease known by the very vague and general

term of 'Horse-sickness,' but which is really a fever whose principal symptom seems to be violent Pleuritis, they might find themselves at any time deprived, from this cause, of their animals.

"To guard against this sickness—as they did *not* buy salted cattle—they were recommended never to permit their horses to bite grass or drink water, until the morning mists, haze, or miasma, with which the low grounds are frequently covered, should have been first entirely dissipated, leaving the field dry. The horses, consequently, should be fed at night, and only allowed to graze at will during the later and warmer parts of each day. This will best be effected by the English sportsman bringing proper nose-bags and head-stalls with him, by the use of which, with great care and attention, I have seen delicate and valuable animals preserved where there were no stables, during very bad seasons. It is the general opinion that the poison causing the fever is to be found in the dew. It is certain that horses eating dew-wet grasses during the sickly season, invariably die. This is so firmly believed, that I have known both Dutchmen and Englishmen to wash carefully every blade of grass or sheaf of oats coming from the damp air, before it was admitted into their stables; and I must certainly say that this safeguard has been followed by good results.

"That there is something in the dew or miasma theory can be readily gathered from this fact: 'imported horses,' when properly stabled, and not allowed out except during the later and warmer hours of the day, seem very frequently to escape the disease altogether; but to an imported animal so kept, one single night's absence from shelter during the unhealthy time will always prove fatal. So much for 'unsalted horses.' With regard to the 'salted ones,' or those presumed to have passed through the sickness, I can speak with considerable certainty, as I have had in my charge at various times large troops of these animals, amongst which were some of great value. Of those bought by myself I shall first speak. They were five in number, and are all still alive, having, under circumstances of most aggravated toil and exposure, passed through the two worst seasons for horses ever known in the Transvaal, and to aggravate the case, in the worst and most unhealthy districts inhabited by Europeans. They were 'Peter,' 'Beaufort,' two 'Charleys,' and a mare who was called 'Mrs. Y.' for political reasons. The first-named animal cost seventy-eight guineas, was a young gelding, barely fourteen hands high, and was bought from Mr. Crane, of Lydenberg, with a character. He had been foaled in Natal, in his third year got the 'sickness,' and was left for dead by the Umsindusi, near Maritzburg. To his owner's astonishment, he afterwards turned up alive, but in wretched condition, having lost all the hair off his back, neck, face, and ears, and being the most unearthly-looking and forlorn wretch imaginable. In this condition Mr. James, of Reedspruit, bought him for £3, and put enough meat on him to enable him to work up easily in a trap to the gold-fields. He then fell into Crane's hands for £15, had 'sickness' again in the Transvaal form, and on recovering was again put in condition, and sold in October, 1876, to Captain Schlieckmann for service at Fort Burgers, where there were no stables—the most unhealthy and poisonous spot for animals in all Africa.

"There, and in the surrounding country, he was worked day and night without food, except what he picked up, until he was returned, early in December, a mere bag of bones, to Mr. Crane. The unfortunate animal was again fattened up and sold to me. I used him constantly in the lower Origstadt valley, in Secocoeni's country, and in every unhealthy place that duty led to, all through the sickly season, during which period no less than 86 of his companions died.

"In the next bad season, after various night journeys, I left him in Pretoria, where the sickness nearly dismounted the Carrington Horse. He again

travelled—of course day and night—to Lydenberg, where sickness lasted till he was sold on the 8th of June last for £50. He is still alive and well, and valued at 100 guineas, after having travelled during my ownership of him, in peace and war, nearly 3,000 miles, sometimes being as much as nineteen hours without having the saddle for one moment off his back.

"The second horse 'Beaufort' was bought with a guarantee from Matcham Coetza, of Nazareth, for £65. He had a relapse of the worst form of 'Horse-sickness' in the Bushveld in December, 1876; but being 'salted,' recovered with simple treatment, consisting mainly of bleeding in the dividing membrane of the nostril. He served through both campaigns, and is still a Government troop-horse, having seen the death of every horse brought with him that was not guaranteed as over the sickness. Charley No. 1. was obtained from Commandant Coetza of the Crocodile valley, has done similar duties through two seasons, and is still on service.

"The other Charley was bought at Henwood's store, for £40, in February, 1877, and has never been in a stable since, except as a casual visitor. His master has ridden him enormous distances, day and night, through the worst parts of the same districts, and ties him up to a tree in his garden at night in all weathers. The mare was a 'Coetza,' a purchase from the Dutch. She is alive and well, after somewhat similar experiences; but, strange to say, her foal, which she got to a salted stallion, died of 'Horse-sickness,' when running with the mother at six months old.

"Amongst the troop-horses supplied to me by Government, all those which had not been 'guaranteed' as 'salted' by some respectable and responsible man, whether Dutch or English, died as soon as they were brought into contact with the fever. Those only that bore unmistakable marks of having had the sickness, survived to be given over to the new authorities.

"I need add nothing in the way of opinion to this illustration. Those who go to South Africa may do as they like: but for my part, I should prefer giving 100 guineas for a 'salted' hunter, to accepting, even as a present for use in the Bushveld, three equally 'unsalted' horses. Good animals, guaranteed, but slow, used to being shot over, can always be obtained at from £35 to £50; but fast, lively, spirited, and trained, 'salted,' shooting horses, are worth from £70 to £150, and no price can be too high for some of the good, clever, and faithful creatures I have known. The best horses are those with black points—even a dark stripe running from the mane to the tail in a beast of any colour, is a sure sign of endurance."

At page 248, Captain Aylward, again referring to the subject of Cape horses says:—

"It must be remembered that winter, and winter only, is, in South Africa, everywhere healthy for men and horses. With regard to these latter animals, I shall now venture to give a few useful hints, which I hope will serve somebody as well as they have served me. Horses that have never been shod, if used to Kafirland, or coming from very mountainous districts—unless broken down about the feet, when they are useless—should never see the blacksmith; but animals from the flat must have their feet nicely prepared, and be thoroughly well shod by a reliable hand, before being taken north or east of the Lydenberg districts. If a horse is tender-footed, and inclined to shrink from stony places, and sharp-pointed gravel, he is practically useless. After the feet, the mouth is of most importance. Nearly all the African horses I have seen are subject to an inflammation of the palate, causing the lower bar to grow down over the teeth, by which the animal is prevented from masticating hard food, and from crushing or grinding maize, or mealies especially. This will at once be detected by his dribbling his corn about in all directions, instead of swallowing it after he has taken a sufficient quantity into his mouth. This is called 'Lampers' or the 'Lampreys,' and

is only to be cured by the overgrowth being carefully burned out by a red-hot iron. This inflicts no pain upon the horse, that is to say, unless it is carried too far. Some people cut and slash the projecting bars with a knife or lancet. The irritation is just as great as if burning were resorted to, but the relief is not so permanent. This whole matter may seem trivial, but if it is not attended to a horse will get off his feed, rejecting even the harder natural grasses, and will speedily lose strength and courage."

The next authority is Captain Gillmore, who travelled through Natal, the Orange Free State, and Transvaal, and has given the result of his journey in a work entitled "The Great Thirst Land." He writes :—

"North of the Vaal river, particularly on the banks of the Limpopo and in many of the regions beyond, Horse-sickness prevails to a frightful extent. I have known one hundred horses from the Free State driven to Bamanwatto, with the hope that five or six would 'salt,' but all died. The consequence of this is, that a horse worth about £6 in the Free State will fetch from £100 to £120 among the Bechuanas, and £150 in the Matabele country. The season when this epidemic rages is from December to June; but, strange to say, if an animal once gets the disease, and recovers, it never has it again. A horse is then called 'salted,' the expression being of Boer origin. I also learned from Mr. Mackenzie, the missionary at Soshong, that the progeny of a salted stallion and a salted mare suffered less, or were less likely to die from the disease, than animals imported from other regions. Again, if the foal should have two generations of salted ancestors, it will have the complaint in a very mitigated form. Instances are occasionally known of horses not having the sickness the first year, but that gives no assurance they will not have it the second; in fact, the life of no horse that does not salt is safe during the months already mentioned.

"When a horse takes the sickness, or at least shows indications of it, thirty-six hours will terminate the matter one way or the other; if the unfortunate animal is alive after that, experienced persons would pronounce an opinion, or express a hope, that the creature was going to 'salt.' When such is the case, the animal must not be worked for many months, but must receive superior food, and be blanketed or housed at night. As a rule, horses that are salted are easily known, for their coats stare in large flea-bite marks, especially about the neck and withers, and on the flanks. Between the jaw-bones, close up to the windpipe, there is a large perceptible swelling, the eye loses its lustre, and the creature evinces a disinclination to violent exercise. A salted horse is thus always sluggish and careless, and must be ridden on a sharp bit and with severe spurs. What causes horses to be so much valued in the countries so fatal to them is, that nowadays, since fire-arms are comparatively common in the interior, elephants have become so wary and savage that stalking them on foot is extremely dangerous and arduous; whereas, if you have a good horse, they are easily overtaken, and their attacks avoided.

"I have been at the death of many horses that died of horse-sickness. The symptoms in each case with the same : a dull, lustreless eye, with great puffiness over the pupil; a staring coat, extreme restlessness, lying down one moment and getting up the next; a marked desire to be in the society of its master, at all events close to the wagons; griping, coughing, and ultimately death; and in the last struggle—the very last, I may say—an immense quantity of a white frothy substance comes from either nostril, covering the ground in front of the mouth for the distance of one and sometimes two feet. The pain the poor creatures suffer while ill with this epidemic is fearful, and their groans can be heard for several hundred yards, if the atmosphere is still. I do not profess to a knowledge of anatomy, but in all

carcases that I have opened, the entire liver, lungs, and heart denoted acute inflammation, while the last organ was soft and flabby.

"Many, and myself among the number, cannot help thinking that this disease is caused by some vegetable matter, not procurable at other seasons of the year. Mr. Thomson, of the Backwan, concurred with me, while Mr. Mackenzie and Mr. Hepburn thought differently. Inoculation has been recommended, but, I fear, not sufficiently adopted. Mr. Hobson, a very large and successful breeder in the Eastern Province of the colony, had many discussions with me on the subject, and expressed great faith in it. Horse-sickness is known in other parts of the country than those mentioned by me, but not with equal virulence."

A correspondent to the *Field* of February 22, alludes to the "Tsetse"-fly, and this Horse-sickness. Of the former he writes:—"The Tsetse-fly, the dread of all travellers in the interior, is, as I know, invariably fatal to all domestic animals, man alone being unaffected by its bite; but the obstacle which it is said to offer to the colonization of the Northern Transvaal and other parts of South Africa is merely a temporary one, for, like the large game, in whose proximity it is always found, it has gradually retreated before the march of civilization. It may, in South Africa, be broadly said to be now confined to the valley of the Limpopo river along its whole course, while towards the sea it extends southward into the Amatonga country, east of the Lobombo Mountains. At no part is it found much, if at all, south of the northern end of St. Lucia Lake, and it will thus be seen that it does not exist in that part of Zululand in which our operations will be carried on.

"The same, however, cannot be said of that equally great South African scourge, the 'Horse-sickness.' Sporadic in the Free State and other parts, it is endemic in Zululand and the latitudes north of Pretoria, and has baffled every Veterinarian who has as yet been brought into contact with it. Its unknown origin, its varying symptoms, its uncertain pathology are expressed by the very vagueness of its name—the 'Paard-ziekte' of the Dutch Boers, the 'Horse-sickness' of colonists. Prevalent in the rainy season more especially, various causes have been assigned for its origin, such as malarious exhalation, feeding in the early morning on grass wet with heavy dew, chill from the great radiation from the earth's surface at night, etc.; but it has been found that stabled horses, kept entirely on 'forage' or corn, though, perhaps, not so liable to it, are, nevertheless, by no means exempt. Its onset is at times very sudden, and many a hunter has started from camp in the morning, only to return footsore and encumbered with his saddle at night. At times, the disease appears chiefly to affect the lungs, and a constant cough is the chief symptom; whilst at others. there is considerable swelling of the head, with the exudation of a green froth from the mouth, the 'Dikkop-ziekte' of the Dutch, who regard the latter symptom as a regurgitation. But be the symptoms what they may, the result is almost invariably the same, and death ensues in about ninety-eight out of every hundred cases. The *post-mortem* appearances afford as little clue as do the symptoms. In some cases inflammatory consolidation of the lungs, partial or lobar, is found; in others, the liver is enlarged and pale, while perforation of the stomach is said to be not uncommon. It is possible, however, that the latter may be only a *post-mortem* phenomenon. The horses that recover —an average of 1·2 per cent., as has been already mentioned—are known as 'gezout,' or 'salted' horses, and are extremely valuable, especially in those districts in which the disease is endemic; so much so that, irrespective almost of individual merit, they will command from £100 to £120, and are by no means always easily obtainable even at that price."

Reviews.

A Guide to Training and Horse Management in India. By Captain M. Horace Hayes, Bengal Staff Corps. Second Edition. London: Thacker & Co., 1879.

We entertain a very high opinion of Captain Hayes' book on Horse Training and Management in India, and are of opinion that no better guide could be placed in the hands of either amateur horseman or veterinary surgeon newly arrived in that important division of our empire. We had not the opportunity of seeing the first edition, but from a careful perusal of the present it appears to contain everything pertaining to training and managing horses. The author proves himself to be not only well informed theoretically and practically, as to preparing horses for racing in that hot climate, as well to their equipment and handling for ordinary work, but he also shows that he is possessed of no mean amount of that knowledge which is derived from the study of veterinary medicine. His remarks on shoeing are most judicious and sensible, and if his recommendations were adopted and carried into effect, the pernicious farriery of the native shoeing-smiths would be replaced by a method which would greatly benefit horses and their owners.

Of the value of horses bred in this country to do service in the East we have rather discouraging testimony. "There is a sort of fatality about English horses in India, for few indeed out of the many that are imported prove, either as racers or ordinary riding horses, to be worth their passage-money out to this country. Their feet and legs generally go to pieces on our hard ground."

Everything relating to racing in India and the rules of the turf in that country is embodied in Captain Hayes' book, and not the least valuable portion of it is the Hindustanee vocabulary, containing vernacular terms referring to all matters relating to the horse, as well as diseases, medicine, etc. This alone should make the guide valuable to the young veterinary surgeon, who finds himself compelled to pick up, as best he can, the rudiments of a strange language when he commences his tour of professional duty.

A Manual of Practical Chemistry: the Analysis of Foods and the Detection of Poisons. By A. Wynter Blyth, M.R.C.S., etc. London: Charles Griffin & Co., 1879.

Mr. Blyth is well known as one of the most intelligent and zealous of the many Medical Officers of Health in this country, and no one has done such good service to sanitary science in the way of working and writing. We had the pleasure of reviewing not long ago his excellent and complete "Dictionary of Hygiene and Public Health," still more recently his pamphlet on Rabies, and now we have an important addition to his works in the form of a manual of practical chemistry, chiefly devoted to the analysis of foods and detection of poisons. Though the book is intended, we apprehend, for the sanitary officer and analyst,

yet as one half of it is devoted to toxicology, and as the methods for the detection of poisons are those which are the most recent and approved, it is as valuable in this respect to the members of the veterinary profession. These methods are given with the greatest clearness and exactness; so that any one who had studied chemistry and made himself acquainted with chemical manipulation, should have no difficulty in following the directions for discovering the vegetable or mineral poisons enumerated.

In the first portion of the book—that relating to the analysis of foods—the only section, perhaps, which possesses an interest for the veterinary surgeon, is that on milk. As our readers may have noticed, Mr. Blyth takes a special interest in this fluid, and his desire that our colleagues may assist him in procuring specimens of milk from diseased animals will, we trust, be readily and largely complied with. In this section of the manual, the portion on unhealthy and abnormal milk will be read with interest. The author says: "Of recent years much attention has been given to the spread of the contagion of such diseases as Scarlet and Typhoid Fever by milk. The cases are too numerous now to deny that sometimes these fevers are propagated through the medium of the milk. Some of the instances cited are, however, to the writer's mind, untrustworthy, and narrated by observers who appear, before they commenced their investigation, to have resolved to accuse and convict the milk." In making this observation Mr. Blyth is quite justified by what has occurred recently with regard to Diphtheria. It is fashionable just now to blame the milk when no other source of mischief can be discovered, and though there may not be a particle of evidence to support the charge; in this way serious injury is done to individual dairy-keepers, and needless alarm is excited in the milk consumers, while the etiology of the disorders is not promoted in the slightest degree.

Mr. Blyth gives a number of instances which go to prove the danger of using milk from animals suffering from Epizoötic Aphtha. He also appends several analyses of this milk.

Relying on Dr. Vallin's researches in Paris, and which are now being published in this journal, the author concludes that Phthisis in cows, although it may be a rare and occasional danger, is not one of any magnitude; "the disease also appears not to be so common as some writers believe. . . . . the milk of an animal thus diseased so rapidly decreases in quantity, that the cost of maintenance exceeds the returns of produce, and therefore the animal is soon slaughtered." We have pretty clear evidence to prove that in some countries, and even in some districts, Tuberculosis in cattle is not at all uncommon, and appears to be on the increase; and there can be no doubt that cows will very often yield a profitable supply of milk when seriously affected, just as oxen in apparently fair condition are found to be extensively diseased when slaughtered. But we will discuss this question on another occasion. We will only now, before closing our notice of Mr. Blyth's excellent book, make the following interesting extract:—

"Dr. Beale was the first to observe that in pneumonic patients, practically the whole of the chlorine was withdrawn from the urine. It

is, therefore, probable that in some internal inflammatory diseases of the cow, attended with exudation, the chlorides in the milk would disappear. This hypothetical observation, however, the writer has hitherto lacked opportunity to verify. Certain diseases of the kidney cause in milk an increase in urea, and though the presence of the latter may be found in minute traces in normal milk, any quantity capable of determination would be evidence of ill health."

In recommending Mr. Blyth's Manual to the veterinary profession, we feel sure that his investigations into the very important and interesting subject of milk in disease will be greatly facilitated and promoted by the numerous specimens forwarded to him by those who have the opportunity.

Proceedings of Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

REPORT OF PROCEEDINGS AT A SPECIAL MEETING, HELD ON THE 5TH MARCH, 1879.

Present—The President, Professors Brown and Pritchard, Messrs. Batt, Blakeway, Cartledge, Cartwright, Collins, Dray, Fleming, Greaves, Morgan, Proctor, Reynolds, P. Taylor, Geo. Williams, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the Quarterly and Special meetings were read and confirmed.

Correspondence.

Letters were received from Professor Williams, Professor McCall, and Mr. Freeman, regretting their inability to attend the meeting.

A letter from Professor Simonds in reply to the letter sent by the Council sympathising with him in his recent domestic bereavement.

A letter from Professor Lieutard, Principal of the Veterinary College, New York, in which he desired to be presented with a copy of the Register for the Library of the College. It was accordingly sent.

A letter from Mr. A. Charles, Veterinary Surgeon, presenting to the Museum of the College an anatomical specimen of the penis of a whale. The only two other specimens of the kind were in the Museum of the Royal College of Surgeons.

A letter from Mr. Queenborough, of Boston, chemist, with which he sent a kidney taken out of a fat bullock, three years old. One kidney weighed half an ounce, while the other weighed two pounds. Both were enveloped in an average covering of fat, and there was no appearance of the internal organisation being wrong.

A letter was also received from Mr. Harrison, of Hereford, Veterinary Surgeon, presenting to the college a unique specimen of the head of a calf for presentation to the College.

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, a vote of thanks was unanimously awarded to the donors for their presentations.

Mr. FLEMING presented some stones passed by a dog both by the mouth and the rectum in twenty-four hours. They were rather curious both as regards their angularity and number. Mr. Fleming also presented a Roman horse-shoe which he had succeeded in obtaining from the curator of the York

Museum. He said that the shoes he had already presented to the museum were only casts. He also presented two old shoes which had been dug up at Hendon, at a good depth below the surface, and they must be two or three centuries old from their shape. They were exceedingly curious and would tend to add to the history of farriery and to the interest of the museum. He had also to state that Mr. Petchley had sent up the head of a foal from Norfolk. The specimen was rather rare.

On the motion by Mr. DRAY, seconded by the PRESIDENT, a vote of thanks was accorded to Mr. Fleming for his presentations; and on the motion of Mr. FLEMING, seconded by Mr. DRAY, the thanks of the Council were unanimously voted to Mr. Petchley.

A letter was received from Mr. Withers tendering his resignation as Treasurer, in consequence of increasing private engagements, and expressing his thanks for the kindness and consideration that had been shown him during his fourteen years of office.

The PRESIDENT moved and Mr. DRAY seconded that the resignation be accepted.

The motion was carried.

On the motion of the PRESIDENT, seconded by Mr. DRAY, a vote of thanks was passed to Mr. Withers for his services.

Mr. DRAY was unanimously elected Treasurer in room of Mr. Withers.

Mr. DRAY in a few words returned thanks for the honour done him.

A letter was received from Messrs. Scott and Co., Bankers, Cavendish Square, stating that they had purchased £311 13s. 9d. Consols in the names of the three trustees, Messrs. Cartwright, Lowe, and Collins, and enclosing the broker's note and stock receipt for the same.

A letter was received from Messrs. Bayliss, Church Court Chambers, Old Jewry, enclosing a cheque for £104 6s. 8d., being a legacy from the estate of the late William Field, Esq., and which has been lodged in Messrs. Scott's Bank.

On the motion of Mr. DRAY, seconded by Mr. CARTWRIGHT, a vote of thanks was directed to be sent to Mr. Field's executors.

A letter was received from Mr. J. Puxley, of Colchester, wishing to be informed by a certificate as to whether Mr. Charles Marking, of Tipperfield, Essex, was a member of the Royal College of Veterinary Surgeons, and enclosing the fee. A certificate had been sent to the effect that he was not a member.

Letters were received from Dr. Dunsmure, furnishing a report of the winter examination of the College, which took place on January 15th, in which he stated that Mr. Hunt, owing to indisposition, was unable to attend, and his place during the practical examination was supplied by Mr. Robertson of Kelso. Out of the total number of thirteen students examined, four were rejected, and eight were admitted members of the College. One passed his minor examination, but none of them were entitled to honours. A balance sheet of the expenses and receipts was also enclosed.

A letter was received from Mr. Moore, Cow Street, Ludlow, Salop, wishing to be informed whether there would be a major examination under the old rules in Edinburgh in July next.

The SECRETARY stated that an answer was sent to the effect that there would be an examination in April and July next, and that it was required of candidates to comply with bye-law 34.

A letter was received from Mr. Ed. Davies, of Llangedwyn, Oswestry, in which he expressed his wish to go up in April next for examination without attending lectures; and, if he could not do so, asking if he could go up in July. He was furnished with an extract from bye-law 34.

A letter was received from Mr. George Taylor, Church Terrace, Cheadle,

Staffordshire, wishing to be informed if he could be examined under the old rules, having entered the Royal Veterinary College in 1869, attended the session 1871-2, and left the college in consequence of family illness. He was informed that he was ineligible to come up under the old rules.

A letter was received from Dr. Favié acknowledging receipt of the register, saying he would send an order to London for payment of "the third examination," and considering that he had dispensed with the first two examinations.

He was informed that there could only be the omission of the first year in the two years' study required by the bye-laws of the college, and that if he desired the diploma he would have to attend for two years the lectures of some recognised Veterinary School and pass the various examinations during that period.

Letters were received from three candidates for the diploma of the Royal College of Veterinary Surgeons holding the Highland and Agricultural Society's Certificate, and wishing to be informed if the agreement had been completed.

They were informed that the subject was still under the consideration of the Council.

A letter from Professor Vaughan was received, wishing to be informed whether a medical graduate from an American university whose diploma is recognised, is entitled to the exemption named in bye-law 47. He was informed that a student would be exempt from the first year's course of lectures, provided his diploma was approved and recognised by the Council of the Royal College of Veterinary Surgeons.

A letter had been sent from Dr. Rice to the President, asking whether the diploma of the University of Vermont, United States, conferring upon him the degree of M.D., would be recognised by the College as competent for presenting himself at the next examination of the Examining Board for his second examination for the membership of the Royal College of Veterinary Surgeons.

The following letter was also received :—

"GAYFIELD HOUSE, EDINBURGH,
"*February 19th*, 1879.

"William Henry Coates,
"Secretary R.C.V.S., London.

"SIR,—In reply to your letter of the 18th date, I may write that my diploma is from the University of the State of Vermont, and that I entered the New Veterinary College at date of opening of present Session, *i.e.* in October.

"I am, etc.,
(Signed) "F. R. RICE."

The PRESIDENT said the question was whether the Council would acknowledge the medical degree from the University of Vermont. He believed that, as a general rule, the University Degrees conferred by the older or Eastern States were valuable; but in the newer or Western States they were of very little value. Vermont was one of the older Northern States, and he believed the degree conferred by the University of Vermont was quite sufficient for their purpose. He wrote to Mr. Williams on the subject, and got an answer to the effect that he considered Dr. Rice to have scientific ablities above the ordinary run of medical men in this country; and that he was a very good physiologist and one of the best anatomists he had ever met. He (Mr. Williams) had every proof that Dr. Rice not only held the diploma of Vermont University, but that he was a member of the most exclusive Medical Society in Boston, which, he understood, admitted none but those possessed of the highest professional qualifications, and that Dr. Rice intended to be-

come a teacher of comparative anatomy or veterinary medicine when he returned to America. He (the President) begged to move that the diploma of Vermont be accepted as sufficient.

Mr. DRAY seconded the motion.

Mr. FLEMING thought it would be well to inquire as to the estimation in which the diploma of the Vermont University was held by the medical profession in this country. The Universities in many of the States were numerous, and some of them below par; and of the University of Vermont he had no knowledge. He thought inquiry should be made of the Royal College of Surgeons or the Royal College of Physicians as to the value of the diploma in question. He did not wish it to be inferred that he cast any doubt upon the diploma, or that Dr. Rice might think he was being subjected to any indignity; but Dr. Rice himself would see the force of his remarks as a matter of precaution.

The PRESIDENT then moved that a Committee be appointed to consider the question of Foreign Medical Diplomas under bye-law 47. The report of that Committee would no doubt hold good in future cases.

Mr. REYNOLDS seconded the motion, which was carried.

The Committee was duly appointed, the members being Messrs. Fleming and Collins, and Professor Pritchard.

A letter was received from Professor Walley, relative to a student from one of the veterinary schools who had been rejected twice under the old rules, and who now wished to join the Edinburgh Veterinary College, and present himself for his first examination under the new rules in April next. He was referred to bye-law 34, which provided that the student should give satisfactory proof of having attended the lectures and general instruction of the school at which he has been educated during the interval of his rejection. He was therefore not eligible to come up for his first examination.

A letter was received from Dr. Dunsmure stating that there would be a large number of students for examination, and proposing that the examinations in Scotland should commence on Monday, April 14th, if possible.

The examinations were fixed for Scotland on the 14th of April, and for London on Monday the 31st of March.

The following letter from Professor Williams was read :—

"THE NEW VETERINARY COLLEGE, GAYFIELD,
"EDINBURGH, *March 4th*, 1879.

"To W. H. Coates, Esq.

"DEAR SIR,—I am sorry that I cannot be present at the meeting, as I wanted particularly to draw the Council's attention to bye-law 46, the meaning of which I think has been misconstrued.

"In order to satisfy myself I have taken a legal opinion upon it, which is as follows :—That according to bye-law 46, an examination is to be held if there be nine candidates, and that such a number may be made up of candidates for the first, second, or third divisions of the examination (for example, three for each division).

"That if the bye-law were intended to exclude any number below nine from any division of the examination, it ought to have been as follows : 'No examination shall take place in the first, second, or third divisions of the examination unless there are at least nine candidates for examination in such division,' which would mean that, although there might be twenty-four candidates for examination, namely, eight in each division, still no examination could be held—a matter of great hardship.

"I now beg to enclose a notice of motion that I think will meet the case, and which I will thank you to suspend in the Council-room.

"I remain, etc.,
"W. WILLIAMS."

"*Notice of Motion as to alteration of Bye-law* 46, *that Bye-law* 46 *shall read as follows :—*

"*March 5th*, 1879.

"No examination shall be held unless there be nine candidates for one division of the examination ; but if a Board be assembled and there be a candidate or candidate for another division, the examiners for which being within reach, then a Board shall be constituted to examine such candidate or candidates.

"*March 5th*, 1879. (Signed) "W. WILLIAMS."

The PRESIDENT gave notice that he intended to move the insertion of the word "each" in bye-law 46, after the word "for," *i.e.*, unless there were at least nine candidates for each examination.

A letter was received from Mr. Callow, of Horsham, Sussex, conveying his acknowledgment on being informed that he had obtained the first prize of the Royal Agricultural Society ; also a letter from Mr. Jenkins of the Royal Agricultural Society acknowledging receipt of the report of the examiners, of which the following is a copy :—

"ROYAL AGRICULTURAL SOCIETY OF ENGLAND,
"12, Hanover Square, London, *February 7th*, 1879.

"DEAR SIR,—I am instructed by the Council of the Society to return to you the enclosed copy of a report which they have received through you from the Examiners appointed to test the qualifications of students competing for the Society's Veterinary Medals and Prizes, and to ask you to draw the attention of the Council of the Royal College to the opinions expressed by the Examiners in reference to the regulations which apply to this examination, and to request that they will draw up for the consideration of the Council of this Society such a modified scheme as in their opinion will meet the objections which appear to exist against the scheme at present in force.

"Yours, etc.,
"W. H. Coates, Esq., "H. M. JENKINS, *Secretary*."
"Sec., Royal College of Veterinary Surgeons.

The Fitzwygram Prizes.

Mr. D. Gresswell, of Louth, Mr. Reynolds, of Liverpool, Professor Voelcker, of the Royal Agricultural Society, and Dr. Dunsmure, jun., were appointed examiners for these prizes.

Report of the Examination Marks Committee.

The PRESIDENT, on the above report being presented, briefly explained its principles. The following is a copy :—

The Committee appointed by the Council of the Royal College of Veterinary Surgeons beg to submit a Report which they have drawn up relative to the marks to be assigned at the examinations.

The Committee recommend the scheme as herewith annexed.

The Committee recommend that the payments made to Examiners be by the hour, and at the rate of £1 1s. per hour, except for the Practical Examination, which should remain as heretofore.

The Committee recommend that numbers be substituted for names in the Examination sheets.

1. For a Candidate to pass with "very great credit," he must obtain marks within 5 per cent., or thereabouts, of maximum number.
2. To pass with "great credit," he must obtain two-thirds of the maximum number.
3. To "Pass" he must obtain one half the maximum number.
4. A Candidate failing to obtain the minimum, fixed at one third of the maximum, number of marks *in any one subject* is rejected.

RECORD OF THE PASS EXAMINATION.

Date _____

No.	NAME.	MORBID ANATOMY. Max. 24 Min. 8	PATHOLOGY AND PATHOLOGICAL TOXICOLOGY. Max. 24 Min. 8	VETERINARY MEDICINE, SURGERY, AND THERAPEUTICS. HORSES. PRACTICAL. Max. 36 Min. 12	HORSES. ORAL. Max. 36 Min. 12	CATTLE. PRACTICAL. Max. 30 Min. 10	CATTLE. ORAL. Max. 30 Min. 10	TOTAL MARKS.	RESULT. Very great credit 171 Great credit 135 Pass 90	
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										

Examiners _____ _____ _____ _____ _____

_____ *Chairman.*

_____ *Secretary.*

The PRESIDENT said it might simplify matters if he were to put it in this light: "First, that it is desirable to adopt a system of marks instead of words; secondly, to discuss what number of marks were necessary to pass good, very good, and reject; and thirdly, to discuss the question of difference of value between the different subjects of examination. He begged therefore to move that the Council adopt the system of marks instead of verbal notation.

Mr. MORGAN seconded the motion which was carried.

The PRESIDENT then moved, "That it is desirable to establish a difference in value in the different subjects of examination." If the Council agreed to this they could discuss what value was to be assigned to the different subjects.

Mr. GREAVES thought there ought to be a relative difference in the value of different subjects students were examined upon. Mr. John Wilkinson had always held to that opinion, and had pointed out to him (Mr. Greaves) many instances where young men were good anatomists but bad practitioners, and he considered it of the greatest importance that the students should be able to diagnose diseases. If the student was well up in practice, even if he was somewhat deficient in chemistry, botany, and other things, it would be much to his advantage. He thought the marks ought certainly to be more in his favour if he was found to be a useful, good practitioner. He had great pleasure in seconding the motion.

Professor PRITCHARD said he was inclined to think that in the event of a pupil becoming acquainted with the fact that a little more importance would be attached to one subject compared with another, it would have a very demoralising effect on his mind. He proposed as an amendment that the marks be all equal.

Mr. CARTLEDGE thought it unnecessary to make any alteration in the marks because the theory that prevailed in the minds of the students that most importance was attached to the diseases of horses and the practical examination of them would still be maintained, whatever decision the Council may come to.

Professor BROWN agreed with Mr. Cartledge that the student well knew he would get off better if he passed a good examination in horse pathology than if he passed a good examination, say, in botany. On that ground he did not see any necessity for intimating to the examiners those subjects which were different in value. They, knowing the circumstances, would arrange the matter among themselves. There was, however, an advantage in keeping the numbers as they were now, giving more value to those subjects that belonged to the Pass Examinations than to the two previous ones. He had worked the proposed scheme out in a variety of ways and he quite approved of it. It seemed to him to be exceedingly well arranged.

Mr. GREAVES said that a system of marks was being laid down for the guidance of the Examiners, which in some measure took from them the discretionary power which they previously exercised. He maintained that if anything at all were done in the matter an authority ought to be given to them either to reject or pass a student more from that one table than from any other table.

Mr. REYNOLDS said that with regard to the first examination he found the maximum and minimum in each subject was the same. It would probably meet Mr. Pritchard's idea if, in the second examination, the anatomy of cattle were placed on an equal footing with the anatomy of the horse and physiology and histology, and the number of marks would be equal to those required for the first examination: and to show that this Council appreciated the subjects in the third examination more highly than the two former examinations, if the two subjects in the Pass Examination were put at a maximum of thirty-six, they should all be made equal. If Professor Pritchard accepted that as an interpretation of his motion, he would second it.

The PRESIDENT in reply to Professor Pritchard, remarked that Professor Pritchard had said that in the third examination on the more important subjects, the examiners would be more stringent in their requirements. The more stringent they were, the less marks they would give, in all probability: therefore on the easier subjects the student would get a fuller ratio of marks than if he were more stringently tested, and thus far there would be a disadvantage. The reason that cattle were put below horses was, that the diseases of cattle were less treated than those of horses. When a cow was ill, she was killed in an early stage of disease, because the flesh was valuable; but the horse was spared, because he was more valuable as a living animal.

The question was then put to the vote, when six voted for the amendment and eight against it. The original motion was therefore declared carried.

The PRESIDENT said that a compromise had been brought to his notice which he thought highly of. It was to retain the same number of marks for all the subjects, but that in certain subjects the qualifying number should be placed higher than in other subjects. Suppose the total number of marks in each standard for the Pass Examination was taken at twenty-four; for morbid anatomy it had been suggested to place the pass at twelve; but in practical surgery, both as regards cattle and horses, to place it at eighteen, or some such number, calling the attention of the students to the fact that that was a subject they must study, and in which they would require to be extra efficient. The idea was a good one, and on behalf of the Committee, he would be glad to adopt it. For the practical subjects, then, it would be twenty-four, "Very great credit"; twenty-one, "Great credit"; "Pass," eighteen; and "Reject," twelve. He moved that the Committee be requested to again meet to settle the question on the basis just laid down, and that the next examinations be conducted on that basis.

Mr. COLLINS seconded the motion, which was agreed to.

The PRESIDENT stated that a letter had been received from Mr. Jenkins as to the examination for the Royal Agricultural Society's prizes. What he (the President) would suggest was that Mr. Jenkins should be written to with a proposal to recommend the Royal Agricultural Society to allow as Candidates all those who had passed with great credit on cattle, although they might not have passed with great credit on other subjects. The limitation of period after taking the diploma should be extended for two years.

Letters were received from Mr. Loch, stating that the agreement between the Royal College of Veterinary Surgeons and the Highland and Agricultural Society had been returned from Edinburgh.

It was duly signed and sealed on behalf of the Council, and returned to Mr. Loch.

Mr. LOCH also enclosed the draft Supplemental Charter, as amended by the President.

The DRAFT SUPPLEMENTAL CHARTER was taken as read.

Professor BROWN said he did not think any discusssion was necessary upon the document, as it was purely technical and legal, and would give a complete settlement to the question at issue. He thought the Council could not do better than accede to it.

After some discussion as to Clause 3 of the Charter,

The PRESIDENT moved that Mr. Loch be instructed to apply for a Supplemental Charter, and that Clause 3 be included in it.

A form of diploma for the holders of certificates, granted by the Highland and Agricultural Society of Scotland, was submitted to the Council, and ordered to be sent to the Highland and Agricultural Society for approval.

Some conversation then ensued as to a site for the proposed new College; but it was decided, before taking any further steps, that a deputation should again wait upon the Duke of Richmond to ascertain exactly his views as to

the probability of the Government giving a money grant towards the erection of new premises, or the use of some Government building.

The PRESIDENT said that he had omitted to call attention to a recommendation of the Marks Committee, "That the payments made to Examiners be by the hour, and at the rate of £1 1s. per hour, except for the Practical Examination, which should remain as heretofore." The object of that was that if there was a small number over the twelve or the nine, if the Examiners got so much by the hour they would probably stay on an hour longer that evening and finish, instead of the Council being obliged to appoint a new evening for Examiners at £3 a-piece.

Professor TURNER and others were agreeable to this arrangement.

Notice of Motion for a new Bye-law to follow 32 *of the present Bye-laws, by* GEO. FLEMING, F.R.C.V.S. :—

"*March 5th*, 1879.

"That in case any student, after having attended the prescribed course, is prevented by any cause—the fault not being his own—from presenting himself for the First or Second Examination, he shall, after having passed the particular Examination, be allowed to present himself for the one immediately following, by studying one term less than he would by the Bye-laws 31 and 32, provided the full number of terms shall have been complied with."

On the motion of the PRESIDENT, seconded by Mr. DRAY, permission was granted to the Secretary to reside out of College if he should wish to do so.

Mr. FLEMING and Mr. GREAVES spoke in feeling terms of the bereavement Mr. Coates had sustained, and which necessitated a change of residence.

It was agreed that the College premises be left in the charge of some responsible person during the night, and that the Secretary be in attendance at 10, Red Lion Square, for business, from 10 a.m. to 4 p.m., except on Saturday, when it shall be from 10 a.m. to 2 p.m.

The Council then adjourned.

ROYAL AGRICULTURAL SOCIETY.

At the monthly council meeting held on March 5th, the Hon. W. EGERTON, M.P. (Chairman), reported that the Committee had received the following report from the Royal Veterinary College, including the particulars of an outbreak of disease in a flock of ewes, the property of B. Moss, Esq., Arlingdon Hall, Essex.

In consequence of a destructive disease having shown itself among lambing-ewes in different parts of the country, and several diseased animals having been forwarded to the College, as well as the carcases of others, a special investigation of the matter was ordered to be made by the Principal, who has received the following report from Professor Axe :—

From communications which we have received, it would appear that this affection prevails to a serious extent in several parts of the kingdom, and the mortality cannot be less than 70 to 80 per cent. of the animals attacked and, in some instances, as much 30 to 40 per cent. of the entire flock. So far as I have been able to investigate the circumstances relating to the disorder, the following facts have been ascertained. The malady is confined to ewes, and attacks most frequently and severely the aged, and such as are the subjects of debilitating organic affections or constitutional weakness. It prevails especially in flocks whose diet during the winter months has consisted entirely, or nearly so, of grass, or turnips, or which have been otherwise sparingly fed. The Down and mixed Down, breeds appear to be the most susceptible, as well as those ewes which bear twin lambs. It usually appears

suddenly, about seven to fourteen days prior to parturition, or shortly afterwards; and in those instances in which ewes are pregnant with twins, as many as 80 to 90 per cent. have been attacked.

In those instances in which it follows parturition it proves rapidly fatal.

The duration of the malady varies from twenty-four hours to three, four, or occasionally seven days, but the shorter periods are the more common. It is non-contagious. The presence of the sick, however, has in some instances appeared to excite abortion in the healthy ewes, and thus occasioned additional loss.

Symptoms.—The primary indications of ill-health consist in a separation of the sick from the healthy, a disinclination to feed, and a dull, lowering expression, attended with feeble movements. In this condition the animal continues only for a short time, and other and more urgent symptoms quickly develop themselves. The gait now becomes very unsteady, the head is carried near the ground, the ears and eyelids droop, and the general expression is one of extreme prostration, being not unfrequently followed by complete paralysis. The constitutional disturbance is further marked by a considerable rise of internal temperature, the heart's action becomes quick and feeble, and the respirations hurried. Should the disease continue its course, nervous phenomena of a very characteristic type appear. The muscles of one or more of the limbs are feebly jerked towards the trunk. The eyes are fixed, and drawn deeply into their orbits, while at the same time the pupil is directed outwards. The head is either drawn directly backwards, and supported in a rigid manner, or it is thrown on to the side, where it persistently rests, as is seen in cows suffering from parturient apoplexy. The lips are turned upwards, or moved from side to side.

As the malady progresses all these symptoms become aggravated, and the wool readily leaves its follicles. In other cases, where parturition has taken place, symptoms of abdominal pain are manifested, owing to inflammatory infiltration of the uterus. The animal moves round and round, and afterwards throws itself down, and turns its head again and again toward the flank. Pain is evinced on pressing the belly, and likewise in voiding the fæces or urine; there is always more or less straining and tumefaction of the vulva, with ejection of a thick, red, and tenacious substance, consisting of blood, mucus, and the *débris* of fœtal membrances. Occasionally, besides the group of symptoms referred to, there is more or less discharge of a muco-purulent character from the eyes and nose, but I am disposed to regard this as accidental, and owing to exposure in the early period of the disease.

Examination after Death.—The body is invariably emaciated, although in many instances a fair amount of fat is found in the region of the kidneys. Decomposition sets in early. The cavity of the belly sometimas contains a greater or less quantity of bloodstained fluid. The intestines are pale, and their walls attenuated. The mucous or lining membrane may or may not be reddened, in some instances it is much so, and at the same time swollen and pulpy: but in numerous cases it is free from any pathological alteration whatever. Similar changes to those last referred to are sometimes found in the fourth stomach, but the first, second, and third stomachs seldom show any alteration either in appearance or structure.

The liver is usually small in size, frequently pale in colour, soft in consistence, and granular in character. In some examples it is congested, red, and largely infiltrated with serosity, while in others it exhibits no perceptible alteration. The kidneys are small, soft in consistence, and easily broken down. In some cases they present a more or less congested state, but in other respects they are free from structural change. Only where the urine is retained for a long period, owing to muscular paralysis, is there any perceptible alteration in the bladder. In these instances the mucous layer is con-

gested, thickened, and occasionally infiltrated with blood as the result of a rupture of its vessels.

When parturition has not taken place, the walls of the uterus are generally thin, pale, and flaccid; but they present no perceptible indications of structural change. On the other hand, in those cases in which parturition has been effected, either previously or subsequently to the attack, the uterus exhibits pathological changes of the most varied and destructive character. The outer or serous tunic of the organ is covered more or less with pseudo-membranous layers of fibrine, which in places become united to corresponding portions of other viscera, more commonly to the rumen or paunch. The uterus is moreover of an intensely red hue, and void of its smooth and polished aspect. The walls of the viscus are not contracted. The cavity contains a large quantity of dark-red or chocolate-coloured matter, consisting of spoilt blood, mucous, epethelial, and inflammatory elements, and the disintegrated remains of fœtal membranes. The mucous membrane is swollen and soaked with sanguineous fluid, or the tissue is ploughed up by blood extravasation. In this condition it is soft, pulpy, and easily broken down. In such a state of the mucous layer the underlying tissues are always more or less infiltrated with serosity, and opened out in every direction, giving to the organ a thickened and rigid character, and at the same time rendering it soft and lacerable in all its parts. In some instances the vessels are plugged with dark coagula and portions of the organ are in a gangrenous condition. The vaginal passage contains materials of the same nature as that remarked in the uterus, and the structures composing its walls participate to a greater or less extent in all the uterine changes.

In nearly all cases the lungs exhibit a more or less congested condition. In some they are also uniformly œdematous; and in others beset with hæmorrhagic patches, or points. Pneumonic consolidation is occasionally present, as are also embolic softenings and gangrene of smaller or larger areas of pulmonary tissue. The two last named lesions are usually associated with extensive disease and disorganization of the uterine walls.

In numerous examples the heart is flaccid, and its tissue soft, but beyond these no changes of note are to be detected. When uterine complications result in blood contamination (septicæmia), blood blotches and petechiæ are invariably found beneath the lining membrane of the left cavities.

In the brain the chief lesions consist of engorgement of the large vessels at the base, general congestion of the coverings, œdema of the nerve tissue, and in some cases serous effusions into the sub-arachnoid spaces.

From a full consideration of all the facts relating to the malady in question, I have arrived at the conclusion that it is due to the debilitating influence of exposure, operating through a long and severe winter, on animals subjected to a defective and illiberal dietary system. This conclusion is based especially on the following observations:—

1. That the older and more weakly ewes are most frequently its victims.
2. That all those animals which are constitutionally weak, or affected with organic disease, whereby the nutritive functions of the body are impaired, are the first to succumb to the malady.
3. That such of the ewes as are pregnant with twin lambs, and on whose system the greatest demand has consequently been made for the materials of the growth and life of the young, are most susceptible to the disease.
4. That the period at which the disorder occurs, viz., seven to fourteen days before parturition, marks the failure on the part of the system to sustain the organic activity which is then required to consummate fœtal development and prepare for parturition.
5. That the outbreaks on which this conclusion is based prove that the

dietary system was manifestly defective when considered in relation to the trying conditions of the present season.

6. That whenever the restorative system of treatment has been adopted the disease has been arrested.

In considering the influence of the present season in regard to this affection, it must be remembered that the mere outward exposure to cold and wet is by no means the only element of mischief. On grass pastures, as well as in the turnip fold, a great thickness of snow has not unfrequently had to be removed before food could be obtained, and in the former case this has necessitated long-continued exertion and a corresponding degree of fatigue. Moreover, every mouthful of food has been charged with an amount of moisture which must have contributed largely to render thin and watery, and otherwise to spoil and reduce the nutritive properties of the blood. The malady may be said to belong to that great group of disorders which annually produce such appalling waste in our flocks and herds, and consequently a paucity of home supply of meat. Recognizing this, the principles to be studied are clearly those which belong to the art of hygiene. Recent experience has afforded abundant confirmation of this view of the causes of the malady.

The adoption of a strictly restorative system of treatment, involving a liberal and well-regulated diet, together with the administration of ferruginous tonics and saline alternatives, has been singularly effective in arresting the progress of the disease. It is well-known that nothing tends so much to the embarrassment of the constitution, and the production of disease, as the injudicious changes and neglect which are usually permitted in the feeding of sheep ; and more especially breeding ewes, which of all others demand the most careful attention. By far the greater number of fatal diseases to which ewes and lambs are liable are of a preventible nature, and their origin is due either to the quantity or quality of food, or to a bad system of management. It too frequently happens that stock ewes are made the scavengers of the farm, and but little regard is paid to their pregnant condition. Turnips that have been eaten off by other sheep, without any additional or more substantial fare, are not unfrequently considered by some persons to be quite sufficient to sustain the system of breeding sheep through the trying period of pregnancy, and this altogether regardless of the fact that the maturing of the fœtus is being consummated during the coldest and otherwise the most unsalubrious season of the year. Practical experience has shown, again and again, that in ordinary seasons the ewe flock may be sustained through the period of pregnancy, on an exclusive grass or root diet ; but while such experience serves to illustrate this fact, it by no means justifies an unqualified adoption of the system. Breed, condition of body, condition and quality of soil, temperature, and other considerations should at all times be taken into account in dealing with the important questions of the food and health of animals.

The adoption of the principles of treatment contained in the preceding part of this report was speedily attended with benefit ; and I am informed that no fresh cases have occurred since my visit, and that the sheep are now much improved in their general health.

With special reference to the outbreak of this disease in a flock of ewes, the property of B. Moss Esq., Harlingdon Hall, Essex, it may be stated that the particular flock in question originally consisted of 145 ewes of the mixed Down breeds. They were divided into two lots of 14 and 131 respectively. The former were old ewes, and the latter a mixed lot of various ages. During the winter the larger number were placed on upland pasture, while the smaller had given to them, in addition to grass, a small quantity of dry food.

The disease first appeared on the 1st of February in the smaller lot; out of which two have died. On the 12th two of the larger lot developed the disease, and others, to the number of eight, were subsequently attacked, and destroyed in consequence.

J. WORTLEY AXE,
Professor of Morbid Anatomy at the Royal Veterinary College.

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

THE annual general meeting of this Association was held in the London Hotel, Edinburgh, on the 12th February. The following gentlemen were present:—Professors Walley and Baird; Messrs. Robertson (Kelso), Cunningham (Slateford), Balfour (Kirkcaldy), Balfour (Markinch), Rutherford (Edinburgh), Reid (Leith), Young (East Calder), Baird junior (Edinburgh), Storie (East Linton), Black (Howgate), Aitken (Edinburgh), Waugh (Stirling), Reekie (Edinburgh), and the Secretary.

Letters regretting inability to attend were received from Professor Vaughan, and Messrs. T. Taylor, and Tedbar Hopkin (Manchester), and McIntosh (Dumfries). Professor Baird, Dick Veterinary College, as retiring President, thanked the members for the courtesy extended to him during the past year, and begged to introduce Mr. Rutherford, his successor in office. Mr. Reekie was elected a member of the Association.

The SECRETARY then presented his report concerning the membership of the Society and the state of its funds. The report was adopted. He also reported that the Honorary Secretary of the National Veterinary Benevolent and Mutual Defence Society, had kindly furnished him with copies of the rules and regulations of that body, which he had circulated among the members of the profession in Scotland. He stated that he would postpone the motion of which he had given notice at the previous meeting, until the provisions of the agreement between the Highland and Agricultural Society and the Royal College of Veterinary Surgeons had been carried into effect.

The PRESIDENT gave notice of his intention to move at next meeting, that the Association subscribe annually the sum of one guinea to the Society for the Prevention of Cruelty to Animals.

Professor WALLEY exhibited a specimen of Osteoid Sarcoma in the femur of a cat, of which the following are the notes:—

The subject of this affection received an injury about two years ago, the femur, it was thought, being fractured. For some eighteen months the case had been under the observation of Mr. A. Grey, Junior, and as the leg had attained an enormous size, and the cat had become very anæmic, she was poisoned, Mr. Grey submitting the diseased limb for my inspection.

After removal of the skin, the limb presented the appearance of an enormous pear-shaped swelling, (the circumference of which was as great as that of the cat's body), extending from the head of the femur above to the tarsus below. Its surface offered several salient fluctuating points, which on puncture gave exit to a tenacious bloody fluid, and on pressure characteristic egg-shell crackling could be detected. On cutting through the tumour in a longitudinal direction, the usual characteristics of an osteoid-sarcoma were well shown—viz.:—firm, dense, glistening tissue of a whitish grey colour, between which numerous loculi existed, whose walls were composed of thin layers of cartilaginous and ossific matter, and containing masses of semi-coagulated blood, with fluid of the same character as that which was evacuated prior to section. The surrounding muscles were atrophied, some of them absorbed, all of a pale colour, and largely infiltrated with sarcomatous elements.

The whole of the lower half of the femur was absent; the distal extremity of the upper half was expanded and its medullary cavity hollowed out.

Microscopical examination revealed a very delicate fibrillated stroma with large spindle and myeloid cells, the former greatly predominating in number. A certain proportion of coloured and colourless blood corpuscles were also present.

As may be easily imagined, the tissues of the body were extremely anæmic and the bloodvessels empty.

Professor WALLEY also exhibited the small intestines of a fœtal calf, which was the subject of spiral torsion, the axis being a fold of the mesentery. Venous strangulation was complete, and the intestine, as a consequence, presented the thickened intensely hyperæmic and ecchymosed condition seen in intestinal torsion of adult animals. The fœtus from which he obtained the specimen had been forwarded that day by Mr. Taylor of Seaford, and it was in the course of dissecting it that Professor Walley discovered the state of the intestine. The fœtus was extracted from a cow, by Mr. Taylor, two days previously; it was of large size, and fully developed, but had never breathed, and was a beautiful and perfect specimen of a *Dicephalus bispinalis quadrupes* monstrosity, the two heads, necks, spines, and tails, being perfect. The four legs also were perfect, and the chest was nearly a yard in girth. On dissection, it was found that all the internal organs were fully developed, but single. The sternum and pelvis were also single, and no connection other than these, the skin, and connective tissue existed between the two spines. There were two sets of ribs, the superior set being much shorter than the inferior.

Both spines formed a distinct lateral curvature in the posterior part of the thoracic region.

Mr. TAYLOR had not had time to give any particulars of the case, further than that the fœtus was extracted with some difficulty, and the cow was doing remarkably well. He promised details in due course.

The PRESIDENT then proceeded to deliver his inaugural address as follows:—

Gentlemen,—In accordance with a promise made about a year ago, I purpose in this my inaugural address to give you a sketch of the history of Inoculation for the prevention of Zymotic Pleuro-pneumonia, its practice, etc. In Gamgee's "Domestic Animals in Health and Disease," published in 1862, we find it recorded that Dr. Willems, of Hasselt, in Belgium, suggested and carried out in 1851 inoculation with the virus of Pleuro-pneumonia, in order to induce a mild form of the disease in healthy animals, and so prevent their decimation by attacks due to contagion. The work met with much encouragement, but, perhaps quite as much opposition; for while many accepted Dr. Willems' results as incontestable, and wrote advocating his mode of checking this destructive plague, as many more, notably Riviglio, a Piedmontese veterinary surgeon, ably contested the validity of the conclusion arrived at by Willems. Gamgee further records that in 1854, a commission was appointed by the French Government to make investigations into the subject, and that although they in part confirmed Riviglio's unfavourable opinions, they, from the incompleteness of their experiments, recommended a further trial of it. Gamgee himself at this date (1862) was evidently violently opposed to it; for we find him say "the practice of inoculation is one which I have to condemn from experience," and that any good which follows its adoption is such as would follow the use of setons, and is obtained at the cost of a certain percentage of deaths, and cases of gangrene of the tail. Again, on the same subject he says, "The all important question, Is inoculation of service? has been solved, for the Belgian and French commissions, Riviglio's, Simmond's, and Herring's observations, with those of many more

(added, I presume to his own experience), prove that, while a certain degree of preservative influence is derived by the process of inoculation, it does not arrest the progress of disease."

I desire you, Gentlemen, to note that opinion, published by Mr. Gamgee in 1862; for further on I shall be able to show you how completely it has been upset.

Holding the opinion he did in 1862, it appeared strange to me that he should, in company with Herring—another dissentient—at the first International Veterinary Congress, held in Hamburg in the following year, 1863, be a party to a resolution which was passed to the effect that the inoculation of cattle should be made compulsory. At that Congress there were present, in addi- to Gamgee and Herring already mentioned, Professors Gerlach and Hertwig, of Berlin, Roll, of Vienna, Nicklas, of Munich, and some others equally eminent, and it is worthy of note that no opposition was raised to the resolution. It may have been that they did not think it worth while, believing in the then unsatisfactory result of inoculation being sufficient to deter any Government from giving effect to the resolution; but it may also have been that their minds were not fully made up—that, in short, while sensible that in inoculation there existed a beneficial result, it was not such as they would require to have before subscribing fully to it. Whether or not the Continental veterinary mind is any clearer on the subject now, I cannot tell you. Gentlemen, I am afraid it is not, else we would have heard more about it.*

In this country, then as now, I believe I am correct in stating that the veterinary profession were and are against the practice; at least all with the exception of a very, very few—so few that they may be counted on the five fingers. I have been particular in noting the state of the veterinary mind at that time, because from my own experience I am fully convinced that the adverse verdict arose from the misapplication—I would use a stronger term, "ignorance"—of the true method of inoculation and blindness to the conditions which are necessary to its successful practice.

The measure of success with which, however, inoculation had in some instances been attended, was happily quite sufficient to keep it from dying out. Slumbering on the Continent, tabooed in this country,† it yet managed to gain a footing in Cape Colony, where, to the best of my belief, it is still practised. From the Cape it found its way to Australia, and was first successfully tried there in 1862, the very year—strange to say—in which it had been so unhesitatingly condemned by Gamgee here.

Introduced by a cow landed in Melbourne from England in 1858, Pleuropneumonia had gradually, but none the less surely, spread from Victoria to the neighbouring colonies of South Australia and New South Wales, and from thence into Queensland. All attempts to stamp out the disease by quarantine and wholesale massacre proved useless, and as the rapid march of the scourge bid fair to deprive the country of one of its principal sources of wealth and economy, stockowners began to consider if there was no other method of combating it.

It was then that inoculation was tried, by first one and then another, and so on; and although it must have been under very adverse circumstances, the results were largely satisfactory; so much so, that for a time the operation became a very general one, as it is at the present time.

* In "Veterinary Sanitary Science and Police," Vol. I, will be found a *résumé* of Continental opinion on the subject up to 1875. At an early date we purpose referring to still more recent evidence.—Ed. *V. J.*

† We have always been favourable to the practice of inoculation, and have done our best to obtain for it at least an extensive trial. This will be evident by reference to the work just alluded to.—Ed. *V. J.*

It must not, however, be supposed that its introduction there was unopposed, or that its growth has been a regular one. On the contrary, to my knowledge it has met with very severe handling, hostile criticism, and, in some isolated instances, I believe, condemnation. At first its success in the hands of a careful few was all that could be desired ; but as its more general adoption grew with men's fears of the disease and its rapid spread throughout an extensive country, those best acquainted with the mode of operating and the necessary precautions to be observed were unfortunately too few to be of much avail in preventing the operation from getting into the hands of adventurous anybodies, —whose sole aim was the filling of their pockets for the time—not the successful application of that which they pretended to practise.

You may imagine the results. The deaths from casualty and mal-practice were quite as many as from the disease. Frequently the cattle were not inoculated at all ; so that between mal-inoculation and the disease, they were often worse than they would have been if left alone. This was notably the case in Victoria and Queensland ; but not so much so, I believe, in New South Wales, where the most intelligent personal efforts of Chief Cattle Inspector Mr. Bruce to instruct had, as they continue to have, the best possible results.

Up to 1868, I cannot say that I had given the subject of inoculation any consideration. As a student I knew its literature and of Mr. Gamgee's attempt to introduce it into Edinburgh (that of course, prior to 1862), and also of its ignominious failure in his hands ; and as I had no means of knowing that the failure arose from the operation being grossly wrongly performed, if I had any opinion at all, it was, I would say, an adverse one.

In the year mentioned, however, and yearly afterwards up to 1874, I had occasion to be in Australia, and had my attention drawn very strongly to the subject by Mr. Graham Mitchell. That gentleman was kind enough to furnish me with the fullest information with regard to it ; more, he demonstrated its efficacy so convincingly that I have to acknowledge that it is entirely to him I owe the debt for any credit which has attached itself to my work here in Edinburgh. Mr. Mitchell, I believe, has to be credited with the honour of being the first uniformly successful practiser of inoculation, and has reaped his reward.

I have now brought the sketch down to 1874, in which year I returned to this city ; and although I had almost immediately abundant opportunity of trying conclusions between inoculation and Pleuro-pneumonia, I found the disastrous results obtained by Gamgee so vividly in the recollection of the dairymen that it was impossible for a time to get any one to permit of its re-trial. I must tell you I did not promise that the thing would be a certainty, because my experience of it in Australia was derived from what I knew of its operation upon cattle living a natural life, under very superior climatic and other conditions, in which respect they differed very materially from the great bulk of our subjects here, at any rate from my subjects—dairy stock, existing under what may be termed high-pressure conditions. I knew, however, that the disease abroad was the same sa here, and was of opinion that if Mr. Mitchell's method was adopted in preference to that on the Continent, that we would get Mitchell's results. That my opinion was correct has been fully and conclusively verified.

I have made an abstract of my last year's work, and I find that I commenced to inoculate on the 1st of February, and I left off on the 18th of November. During that time I inoculated in 78 different localities, all of which, with the exception of 51, were within 3 miles of this room.

Of these places there were

	Infected at date of operation		70
Not	„	within three months prior	2
Not	„	„ six months prior	3
Never	„		3

The number of animals inoculated was 1,596, all of which, with the exception of 28, were milch cows.

Of this number 1,511 were inoculated when the disease was in the byres in which they were housed.

46 had not been exposed for three months to an infected animal in their byres.

21 had not been for six months.

and 18 never, so far as the byres were concerned.

Of the gross total, I lost a fraction under 5 per cent. from casualty, the result of inoculation and from failure of inoculation to give immunity. I would, however, ask you, gentlemen, to bear in mind this very important circumstance, that 5 per cent. of casualty is a very much lower death-rate than has been yet obtained; and as my work last year was largely experimental, I am sensible its being so increased my average. I am fully of opinion that, entering this year again upon the same course, with my last year's experience, I shall, if spared, be able in another year to report to you a still lower one. My death-rate was not in proportion to the individual number done in individual instances, but to the systemic conditions under which they were done, the mode of operation, the weather, etc. Hence it is that I say I have now a knowledge of a great deal to be avoided, which I had not last year. Taking the systemic conditions first, I find that it is not advisable to inoculate cows immediately before calving. I would not like to do it upon any cow that had less than eight or ten weeks to run; nor is it advisable to do it immediately after calving. At least fourteen days ought to be allowed to elapse, and it should only be done then, if the animal has both locally and constitutionally recovered from parturition.

It should not be done, but deferred, if there is the slightest degree of inflammatory action in any part of the body; in short, the animal should be, as far as we can ascertain, well in all respects. It should not be done if we consider the animal to be already affected with Pleuro-pneumonia; but, at the same time, I must tell you that I have reason to think that there is a stage of the disease, the very earliest, when if inoculation is performed, good results may reasonably be expected to follow. I do not advise it, however.

It is not advisable to inoculate in very hot weather, such as we experienced last July, especially if the animals are in close, confined, and badly ventilated byres; and it is still less advisable to inoculate during the winter months, unless special arrangements can be made for maintaining a uniform warm temperature. It is not, in my opinion, advisable to inoculate with any but one kind of virus, and that should always be fresh and absolutely free from any foreign matter; nor is it advisable to adopt any modification of the true method of inoculation. During last summer I tried several plans with the view of obtaining perfect results, with less risk and inconvenience to the animal; but I have, as the result of my experience, resolved not to do so any more The very few animals that I have had take Pleuro-pneumonia within a reasonable time after inoculation—say, after a month—have invariably been animals inoculated mildly; in fact, that had not been inoculated at all, as compared with others. I would ask you to note that mild or modified inoculation is not to be depended upon, and should not, therefore, be practised. I am of opinion that there is only one mode of inoculation, and shall now describe it.

The virus or lymph should be obtained from an animal not too far gone in the disorder, and from one that is in other respects in fair condition, and free from other disease, as for instance, Tubercle. "Lymph" is the amber-coloured liquid exudate found in the interlobular tissues, between the pleural membrane and lung, and occasionally in semi-coagulated masses between and on the surface of the pleura. Too much care cannot be taken in selecting the lymph to be used; as its fitness is the most important thing in

connection with the operation. I have said select and use only the liquid amber-coloured exudate free from blood, serum, and other extraneous matter; do not on any account be tempted to use anything else. The want of due care in this respect was one of the chief causes of the failure of inoculation in Gamgee's hands, as it has been in that of others, and would be again in like circumstances.

Having obtained your lymph, you saturate with it as many pieces of white worsted, eight to nine inches long each, as there are animals to operate upon. The instruments required are a pair of strong clipping scissors, a pair of rowelling scissors, and the needle. The latter should be four-and-a-half inches long, about a quarter of an inch broad, rounded on the edge, and carefully tempered, so as not to break or bend, lancet-shaped at the point, just behind which it should be pierced with a long eye and be slightly grooved for retention of the thread. It should be fitted with a small handle, to facilitate the passing of it through beneath the skin.

The proper place to inoculate is the tip of the tail. Of course you can inoculate any part of the body; but the tail-tip is to be preferred, because you get perfectly good results from operating there; and if, during the process that follows inoculation, it should become necessary to remove it, such may be done with no risk and little inconvenience to the animal. Further, extensive swelling of a specific character, and gangrene, are less likely to follow the operation when the tip is selected, in preference to the root of the tail.

In operating you require the assistance of two men and a lad: one man to hold the animal by the head, one to distract her attention behind with one hand, while with the other he grasps the tail firmly to prevent it from being whisked out of the operator's hand. The lad is required to hold a saucer, containing the threads, ready saturated in the lymph, to be used.

The operator, standing behind the animal, seizes the end of the tail, and with the scissors removes the hair, beginning an inch or so from the extreme tip, and clipping upwards for five or six inches, and leaving only a short tuft at the end. Then with the rowelling scissors he makes two transverse cuts through the skin on the posterior aspect of the tail, leaving a space of three inches at least between the cuts. The needle is then slightly dipped into the lower cut, passed upwards and outwards through the upper cut, and turned round sharply several times to enlarge the channel. Then threading the needle with a doubling of the worsted, he carefully withdraws it, leaving the saturated thread in the tail; and after cutting any too long ends of the worsted off, the operation of inoculation in its first stage is complete.

Within two or three days after inoculating, the part operated upon becomes slightly swollen, painful, and erythematous, but there is no discharge from the orifice, similar to what we get from the introduction of an ordinary seton; the swelling locally increases; and although the tail above may not be in the least degree swollen, the animal is not able to lift it. About the ninth day the skin is observed to take on a yellowish tinge, there is a rapid desquamation of the cuticle, followed by an exudation on its surface of beads of amber-coloured lymph, similar to that introduced, and possessing similar properties. It usually takes from nine to twelve or thirteen days for the exudate to make its appearance. Occasionally a longer time is required, but when it does appear, inoculation may be considered to have been successful, and the second stage is complete.

There are two courses now open to the operator, and much of the success of the operation depends upon which he will adopt. He may elect not to interfere with the process, but allow it to run its course, which, under ordinary circumstances, will be death and wet gangrene of the end of the tail, followed by its being thrown off. This is usually done by nature establishing a line of demarcation above the gangrenous end, sufficiently powerful to resist the

spread of the gangrene. It is, however, impossible to be certain of this line being drawn, or the position of it; and the risk is then materially increased of gangrene spreading upwards towards the root of the tail, where it becomes highly dangerous. For this reason, I advise the non-adoption of the plan of allowing the process to run its own course. I find the best plan is to remove the end of the tail, when once inoculation is fairly established. There are cases in which this must be done even earlier, and there are others in which it may have to be accomplished more than once; as, for instance, when the sudden setting in of coldness of the end of the tail indicates the death of the part. The best guide we have for knowing at what place to amputate is obtained by examining carefully the end of the tail. The part to come off may not necessarily be cold, but it will be wet with exudate and probably somewhat discoloured for an inch or so above it. I find that where amputation is practised early—say on the twelfth to the fourteenth day—that it is not necessary to make the division more than a finger's breadth or so above the upper incision made in inoculating. The amputation should be followed by profuse bleeding. If not, and if on examining the end of the stump we find clotting of blood in the vessels, amputate again higher up till bleeding follows. Neglect of this measure is apt to be followed by gangrene, in fact, the engorged vessels are an indication that it has already set in.

Where a number of animals have been operated upon, you will find that several of the tails will, after amputation of the inoculated portion, scab over and heal almost at once without further inconvenience. In the greater number of cases, however, swelling of the end of the stump sets in (and so long as it remains warm, no anxiety need be entertained), followed by suppurative process and the throwing off of a small portion of the tail. This process, I have said, is not to be feared; neither is the formation of abscess higher up, so long as it is confined to the tail. All the local treatment necessary is fomentation twice or thrice a day with carbolised water, and the dipping of the end of the tail in a strong solution of carbolic acid—the latter always after milking. A large per-centage of the cases heal up by the end of the fourth, fifth or sixth week; but very few extend beyond these periods, unless abscess has formed at the root of the tail. I must point out that this is not ordinary abscess, but is owing to the localisation in the part of the peculiar inflammation induced by inoculation; to the formation of exudate in a firm solid mass and to its subsequent partial liquefaction, when softening and pointing of the skin take place.

I have said that the abscess following exudate deposit at the root of the tail occurs occasionally as an ordinary sequel of inoculation; but more often it is the result of a kick when the animal is lying, or a blow with a milking stool or stable fork, either of which, I regret to say, is much too frequently administered. When the result of external injury, the swelling is usually on either side of the tail, over the ischiatic prominences, on the butt of the tail, or the quarter; I have also seen it on the ribs, the shoulder, and front of the sternum, in which situation the provocative is a bruise in lying down, or against the trevis post or feeding trough. So long as abscess forms there is no danger to be apprehended; but if, instead of abscess, you get extension of the exudate, loss of appetite and symptomatic fever, the case becomes a grave one, and the animal had better be slaughtered. In like manner should she be treated when the urino-genital organs and region become similarly affected, from extension of the exudate from neighbouring parts. The condition presented by a cow in the latter circumstances is so painful, that we may congratulate ourselves it is not of very frequent occurrence; and I am satisfied that experience will do much in the way of rendering it less frequent.

Scarification of the exudate has been recommended by the Australian authorities, but my experience does not bear out its practice; on the contrary,

the one thing that affords relief is constant fomentation with water almost too hot to bear and strongly carbolized.

Males, young stock, and calves, I find from experience can be inoculated with little or no risk, in Australia the per-centage of death and casualty being lately given as low as two per cent. During last season, I inoculated only about thirty bullocks, but I did a considerable number of calves in different infected places, and with the best possible result—no casualty, and as yet perfect protection. This is a very important fact; for should inoculation ever become general in the country, the necessity for doing it upon our home-bred stock when purchased into dairies would be obviated by their being done at an early period of their life, when the operation, while being equally protective, is attended with little or no risk, and does not call for any after attention and treatment.

I have nothing to say to you on the subject of diet while animals are under the operation. I have inoculated under all conditions in this respect, and find that the diet only requires to be rather below than up to the mark in quantity for the first three weeks, and of a nature calculated to maintain the perfect health and function of the stomach and bowels. The French commission, I think, recommend a saline purgative about the eighth or ninth day; and to some kinds of stock I believe the medicine would be of great benefit. There are objections, however, to its employment so far as dairy cows are concerned, and I hardly think it would be necessary to physic in the case of grazing stock. If it is deemed advisable to give any opening medicine, the purpose will be fully and efficiently met by the occasional admixture in the soft food of sulphur and treacle.

This, of course, is with the view of lessening any attendant fever. I have not, however, found that there ever is much, the thermometer rarely rising above 102 degrees. Certainly we observe a certain amount of dulness, with staring coat and restlessness for a few days, and occasionally—not always—a slight diminution in the secretion of milk. These conditions, however, are premonitory to the occurrence of the local conditions characteristic of true inoculation, and should not be interfered with. With the decline of the process, there is a very keen appetite, abundant secretion of milk, and great tendency to thrive well.

And now, gentlemen, I think I have said sufficient, and have occupied your time long enough for one hearing. I have left a great deal unsaid; much that I would have liked to bring before your notice, and some of it of the very greatest interest, both as regards the theory and the practice of inoculation. That must, however, be left for some future occasion, by which time I shall hope to meet some, if not all of you, as practisers of this great work, able to sustain me in the declaration which I here make, "That in inoculation we have an agency which, if intelligently applied, is unfailing in arresting and preventing the course of Pleuro-pneumonia, no matter what the conditions are under which it exists."

To some here, and to the profession at large, that, I daresay, will seem a bold thing for me to say. I, however, have had abundance of opportunity of well trying conclusions on the matter, and feel myself quite justified in declaring further, "that so certain and absolutely protective is inoculation in its effects," that I feel confident that, as its practice extends, the dread of Pleuro-pneumonia and the difficulty in dealing with it will become as nothing; and that our profession, in practising it, will, while benefiting themselves, largely contribute to the prosperity of their clients individually, and to the wealth and general good of the country.

After some remarks from Mr. Robertson and Professor Walley, the meeting was brought to a close, and the members afterwards dined together.

February 5th, 1879. J. McFADYEAN, Secretary.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE Annual Meeting and Dinner of the above Society for 1879 were held at the Queen's Hotel, Leeds, on the 31st January, the President, Peter Walker, Esq., in the chair. The following members were also present, viz., Messrs. Jas. and Josh. Freeman, M. E. Naylor, T. Greaves, J. W. Anderton, Jno. Cuthbert, J. W. Ferguson, G, W. Schofield, M. W. Murdoch, J. L. Faulkner, D. Spillman, T. Pratt, Parlan Walker, Professor Axe, J. E. Scriven, Frederick Danby, P. Deighton, Geo. Carter, S. Beeson, and the Secretary. Messrs. W. A. Taylor, W. Dacre, and T. Hopkin, were present as visitors.

Apologies were received from Professor Williams, Messrs. E. C. Dray, Jno. Fryer, J. S. Carter, Jno. Freeman, D. R. Sowerby, J. M. Axe, C. Patterson, W. Lodge, Jno. Schofield, J. Bale, and E. J. Dwyer. The minutes of the previous meeting were read and confirmed.

The SECRETARY proposed and Mr. MURDOCH seconded, the election of Mr. Stephen Beeson, M.R.C.V.S., Harrogate. Carried.

It was resolved that Mr. J. W. Anderton, F.R.C.V.S., of Shipton, be supported as a candidate for a seat in the Council at the ensuing election.

The PRESIDENT read the inaugural address, which was followed by a discussion upon some of the subjects dwelt upon.

Mr. GREAVES was of opinion that a student had a perfect right to further examinations after being rejected three times, as long as he was able to pay the fees, etc. There had been a considerable number of students rejected at the examination instituted lately, and the question was, did these large numbers of rejections arise from the negligence or apathy of the students, or was it in consequence of deficient instruction at the schools? He thought it was the duty of the schools to obtain as many patients as possible, in order that the student might obtain practical knowledge. It would be necessary to obtain a new charter, in order to carry out the arrangements with the Highland Society; this would afford an excellent opportunity for obtaining a penal clause.

Professor AXE said that the question of rejected students had been the subject of much comment lately. The fact was the number of rejections very little exceeded the average; the rejected candidates had invariably amounted to about one-third of the number examined. As to the causes of the rejections, his opinion was that the principal one was, the non-application to their studies, and the general apathy and neglect shown by the large majority of unsuccessful students. He was of opinion that the quantity and quality of the education given at the schools was very large and comprehensive, and therefore any young man who devoted the necessary time and attention to his studies ought to be able to pass the required examination. He thought it was one of the duties belonging to Veterinary Societies to know that the instruction given to students at the schools was of a satisfactory character. With regard to the controversy respecting the apparently low charges for subscribers to the Camden Town School, he begged to remind the members that this was done expressly in order to obtain practical information for the students, and surely the graduates of the school would not desire to curtail the advantages in this respect which they had formerly enjoyed. He was of opinion that the present opportunity was very favourable to endeavour to obtain a penal clause, and he trusted that the various Veterinary Medical Societies would bring pressure upon their Parliamentary representatives to obtain their support in favour of the new charter.

Messrs. CUTHBERT, FREEMAN, ANDERTON, etc., also addressed the meeting upon various subjects alluded to in the address.

A unanimous vote of thanks to the President concluded the business of the meeting.

At the dinner the usual loyal and patriotic as well as professional toasts, were proposed and responded to, and an enjoyable and instructive re-union was passed.

Professor Axe has kindly consented to introduce a paper for discussion at the April meeting entitled "Aids to Diagnosis."

The President's Address.

Gentlemen,—It is with feelings of some trepidation that I venture to assume the dignified position to which you have appointed me, and I can only assure you that it will afford me the utmost pleasure to serve you, and to further the interest of the honourable profession to which we belong. Looking back at the history of the profession for the past eighteen years I have now had the honour of belonging to it, there are many points of interest to which I might call your attention. It is by no means a difficult matter to trace its progress, its failures, and successes, until, landed as we are at the year of grace 1879, we find ourselves enjoying an established position, a distinct recognition of, our status at the hands of the intelligent public, with a growing determination within the profession to consolidate its forces and establish more firmly our rights and privileges. It is quite true there are difficulties standing in the way, prejudices, misconceptions, and abuses to be confronted, but we need not fear them if we only approach the consideration of all matters brought before us with a determination to bear and forbear, and with a loyal desire to individually and collectively handle anything which injures or interferes with the position of the Society and its members, and if we do this, I am sure the records of the forthcoming year will not be barren of good work. Gentlemen, I crave your earnest assistance and support, and above all your candid, outspoken spontaneous expression of opinion in all discussions that may take place. Let us get rid of that morbid reluctance to speak, from fear of attracting a little interest here and there. If any one has an abuse to complain of, or is aware of anything against the credit or interest of the profession, let him out with it.

These are energetic words, but well meant, and if carried out with your assistance something tangible must be the result. There are two or three matters now before the profession which are likely to considerably benefit us and are well worthy of consideration. One is the present and amended mode of electing members for the council in London which has been in operation for some time, under which provincial nominations may be made. This opens out an opportunity for the country practitioners to have their views represented at the central board; this is a valuable change, and I think that if we only take care to make a judicious selection of representatives, much good may be done in removing any misapprehensions or disabilities, under which we may have had to labour, and the evil of what we have deemed a too cenralising influence in the profession corrected. At the last meeting of council there was a discussion on the 37th clause of the bye-law, which, as you are aware, provides that no student shall be allowed to present himself before either section of the board of the Royal College of Veterinary Surgeons for his first, second, and third examinations more than three times. I consider this a most objectionable rule, and likely to create a division in the now united profession. I regret Mr. Peter Taylor's amendment on that clause was rejected, although the smallness of the majority showed that there was a strong feeling in the council in its favour. I consider the principals of the schools are the best judges upon such a question, I believe also that students are admitted to the schools too young; inasmuch as not a few received their

diplomas while yet in their teens. It would be more satisfactory to the teachers and advantageous to the students if they were nearer their majority before entering the schools.

Another matter which is likely to engage our attention during the year, is that of the Penal Clause—a subject which was brought so prominently before you fifteen months ago by a near relation of mine, that I need not now refer to it at any length, but which in its ramifications must greatly affect the constitution of the profession. It has received considerable discussion and attention, and I think there can be no two opinions as to its desirability. Now that the chief obstacle is removed, the Highland Agricultural Society having ceased to grant certificates, another year should not be allowed to pass without strenuous efforts being made to obtain it. Funds will, of course, be required, and I shall be glad to contribute my quota, and I have no doubt the various members of the society will be proud to do the same; so that I trust the question will be speedily taken up. I may here state that the following are the conditions upon which those who hold the Highland Society's Certificate may obtain the London diploma without examination; those who graduated with the Highland Society in 1848 to 1872, one guinea; 1873, two guineas; 1874, three guineas; 1875, four guineas; 1876, five guineas; 1877, six guineas; 1879, seven guineas. These terms are, of course, quite open to all, and I hope every one who does not hold the Royal College diploma will lose no time in applying for it, so that in future we may be one united body.

The next matter which I would notice is one which has lately been going the round of the veterinary periodicals, namely, the examination fees. Private members of our profession in London appear to be placed in a very invidious and unpleasant position, if the statements of Mr. Moore are to be relied on, and I see no reason why they should be doubted. Gentlemen, those statements represent a state of things which I think our profession ought not to tolerate for a moment. Leaving the special case referred to for subsequent discussion, I would add—in view of the "Murdock" case lately tried in a local court, which held that a veterinary certificate covered all kinds of risks and contingencies which might happen to a horse—that I think the examination fee should advance *pro rata* with the value of the animal, that is to say, if a horse is worth £50, half-a-guinea for an examination, exclusive of journeying and travelling expenses, and half-a-guinea extra for a certificate. If the horse is worth £100, one guinea for examination, with half-a-guinea for certificate. I may just say, in passing, that the Murdock case was one of great hardship to our friend, and certainly one in which any member of the profession might have got involved under similar circumstances.

There is one other subject I would like to say a few words on, and that is the *Dick Testimonial Fund.* I think every member of the profession ought to be proud of the late Professor Dick, and to approve of any mode of perpetuating his fair fame. It may not be generally known what he accomplished for the profession. In considering anything that he did, we must look at his humble origin, and the state of the profession when he came to its rescue. When we do so, and realize the opportunities that by his exertions were given to now prominent members of the profession, the unfailing and indomitable perseverance he displayed in grappling with the almost insurmountable difficulties he had to encounter through the imperfect knowledge then existing of the Veterinary Art, and the obstructions he met with, we can only stand amazed at the work he did in founding his College, and carrying it on to success. Where do you find a parallel to such devotion to a cause? I refer to this, because I feel that the profession has not done itself credit in allowing honour to whom honour is due to remain so long neglected. Many once hard-fisted mechanics are now, through his instrumentality, living in influence

and affluence, who would otherwise have been between the bellows and the anvil—a position from which he himself sprung. Gentlemen, I would be extremely glad to bring about a revived interest in this matter, and will adopt any course that may be suggested to that end.

Gentlemen, I have now to thank you for the distinguished honour you have conferred upon me, and as I have already said it will be my endeavour to fill the position satisfactorily—a task which I do not think will be very difficult with the support which I am sure you will all be ever ready to give me. Previous to coming to Yorkshire, I was a member of the Mother Society in Glasgow, and ever since coming to Bradford, I have been associated with you. I have always made an effort to attend your meetings, when not prevented by professional engagements, and I am glad to be able to say that I have derived profit from the various discussions upon the subjects that have been brought before us for consideration. I look back upon my connection with you with great satisfaction, and it only remains for me now to wish you a very Happy New Year. May it be a very prosperous one, and may the Grim Messenger come to no heart connected with us.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE eighth General Meeting of the above Society was held at the Medical Institute, Liverpool, on the 14th of February, the President, P. Taylor, Esq., in the chair. There were also present—Messrs. T. Greaves, T. Taylor, W. A. Taylor, T. Hopkins, E. Falkner, and S. Locke, Manchester; R. S. Reynolds, J. Leather, C. W. Ellam, D. Hutcheon, W. Stevenson, and W. A. Wilson, Liverpool; J. Welsby, West Derby; J. Freeman and Sowerby, Hull; J. Carter, Bradford; W. Schofield, Pontefract; J. Storrar, Chester; W. Dacre, Altrincham; D. Rothwell, Woolton; W. Woods, Wigan; W. Whittle, and the Secretary. Letters of apology were received from members unable to attend.

The minutes of the last general meeting having been read and confirmed, as well as the minutes of the second meeting of council that had been held in the interval, containing a *résumé* of the various cases with which the Society had to deal, the President delivered the following address.

Gentlemen,—This meeting has been called to ask you to review our past work, our present position, and to alter or arrange our rules for our future guidance and direction, and the election of office-bearers to fill vacant places.

I meet you to-day with mixed feelings of pleasure and sorrow. We have to lament a great loss in the death of our honourable colleague and Vice-President, the late Gilbert Heyes, of Liverpool. He was an active member of our Society since its formation, and for the last ten years fulfilled the duties of Vice-President. All of us have lost a kind-hearted, honourable, and active friend, one who was ever ready to assist the poor and needy of our profession, and give a helping hand to a professional brother when in distress and difficulty. I hope some kind member of our body will make a a motion that our Secretary be instructed to write a letter of sympathy and condolence to his sorrowing widow in the irreparable loss she has sustained. We have also lost other members by death, and amongst them was the late Alfred Challinor, of Bolton.

Under this dark cloud of affliction, we have a glimmering ray of light in the horizon, which cheers our hearts to advance onwards, with a firm resolution, in the good and charitable work we have in hand. I am more than pleased to announce to you that the first and beneficent legacy of the sum

of £50 has now been paid to the National Veterinary Benevolent Fund; it was left to this Society by an esteemed and noble member of our profession, the late William Field, jun., of London. The inheritor not only of a noble name, but he was a great worker in his time in advancing the status of our profession, and who has by this generous act shown to that profession he so loved the nobility of his nature, by leaving behind a sum of money to be added to our Benevolent Fund. The fact will be for all time to come written in the pages of our history, and be handed down to posterity, that William Field, jun., lived and died to assist our National Veterinary Benevolent Society. He was the first member of our body to leave behind a legacy that will redound to the honour of his name, and be a great and noble example to all future ages, and to the wealthy members of our body, "Do likewise"—for it is to provide for the wants of the sorrowing and poor widows, the kind affectionate orphans, children whose parents were removed from this busy scene when probably in the meridian of life and activity, and also for the helpless, desolate, and oppressed members of our body, and to those who are afflicted by sickness or disabled by accident from following their professional calling.

An example like this I wish in my humble way to place before our profession, as I know there are many more in our ranks who have equally generous hearts, and who have also ample means for doing good to our noble Benevolent Society. Gentlemen, there was some little legal difficulty respecting the late Mr. Field's legacy to our Society, and the matter was referred to a court of law, and decided in our favour. We are much indebted to Matthew Harpley, Esq., F.R.C.V.S., and Veterinary Surgeon to the Royal Horse Guards, for the very kind and courteous manner in which he watched over our interests and advocated our claim. For these services our warmest thanks are due to him.

We have assisted for the last eight years two orphan girls, affectionate and kind children of the late George Brown, Veterinary Surgeon, of Pendleton. It affords me much pleasure to be able to state that the large amount of £902 13s. 1d. is placed to our credit at the bank, on behalf of the Benevolent Fund. We have also in hand a cheque for £50, besides some annual subscriptions and entrance fees. This fund, as you are well aware, is held in hand for the special purpose of rendering assistance to those of our Society who are in need. No doubt, you will have seen a case in the November number of THE VETERINARY JOURNAL of last year, wherein the Editor kindly said the Benevolent Society might show their generous conduct. But we have rules to direct the office-bearers, the person named was not a member of our Society, but if you think you can conscientiously bestow a charity, I commend it to your notice and kind consideration. I know that I shall be met with an answer, that we must be guided by the rules. I know that; but I do think that a bestowal of a charity in a good cause and to a professional brother in need will redound to our honour, and carry to the ranks of our profession who are not members of our body a salutary feeling to join such a good and noble Society.

Respecting the Defence branch of our National Society, the industrial part of our Society. Industry is a noble thing, being the energetic engagement of the body and mind in useful employment. Even benevolence depends upon industry. Labour with your hands at the things that are good that you may have to give to those that need it. Therefore you can see how harmoniously the two branches of the Society work together for each other's mutual advantage. Your office-bearers and Council have had arduous, difficult, and delicate duties since we last met. Here in Liverpool we attended many times and arbitrated two large claims, settling them at a cost to the Defence Society of £66 12s.

About the close of last year we visited Middlesborough and Leeds three times, and defended a case in the County Court at Leeds, and this case cost us £38 18s. 4d., making a total cost for the three actions defended by this Society of £105 10s. 4d. The Leeds case was peculiar and intricate, you will have seen it in our VETERINARY JOURNAL: it is one which places upon record that a professional man is considered an expert in that particular branch of science he represents, and is actionable at law for a sum of money if he conscientiously gives an opinion which would be at variance with two of his brother experts.

We have an able and judicious member in our Council who considered that we were entitled to our opinion, and unless it could be proved that carelessness or negligence existed in coming to that opinion, we had a right to give it, and would not be actionable in a court of law. But this case proves that opinion to be fallacious.

Although we lost the case, the plaintiff, who sued for £50, only got a verdict for £15. We feel a little humiliated but not disgraced or dishonoured as the Judge exonerated the professional witnesses from all impure and unjust motives.

A great number of other cases have been arranged and settled by the tact and wisdom of your Council and officers; besides, many cases have had our united opinion as to the advisability of coming to an amicable settlement or as to the most prudent course to pursue, although those involved were not members of our society.

I cannot speak too highly of the great and efficient services rendered by my brother office-bearers and the attentive intelligence your Council have bestowed on all cases brought before them, as well as the care with which they have guarded the interests of your Society, and those of the aggrieved parties.

Unjust and excessive demands will be made, but in all cases let us seek to conciliate conflicting claims by justice and equity—not by law—as it has been said by Pope:—

> "Honour and shame from no condition rise;
> Act well your part, there all the honour lies."

The PRESIDENT proposed the following alteration of Rule 2: "That the entrance fee for new members shall be £5." This proposition was seconded by the SECRETARY.

An amendment made by Mr. W. A. TAYLOR, seconded by Mr. T. HOPKINS: "That the entrance fee be £2 2s.," led to a considerable amount of discussion; but the original motion was ultimately carried, with the addition that the increased rate should not take effect before the first of January, 1880.

The following proposed new rule was withdrawn: "That no one shall be defended until he has been six months a member of the Society."

The PRESIDENT then proposed the following new rule, which was seconded by Mr. J. LEATHER, and carried.

"It shall be incumbent upon a member having reason to suspect a client of intentional ill-will, or in the event of a dispute, to call in one or two professional brothers to advise upon the case; and, if immediate dissolution be likely, to value the animal in question, and after death attend a *post-mortem* examination. The written opinions and certificates of the professional men called in to be sent to the President or Secretary."

Mr. GREAVES proposed the following new rule, which was seconded by Mr. WHITTLE, but afterwards withdrawn.

"In any case the members shall show a disposition to assist and conciliate the owner, and the officers of the Society shall have a discretionary power to have an interview with the plaintiff with a view to settlement."

It was then proposed by the PRESIDENT, and seconded by Mr. GREAVES, "that Mr. R. S. Reynolds, of Liverpool, should be elected Vice-President or the Society, in place of Mr. G. Heyes deceased."

This was carried unanimously.

On the motion of Mr. WOODS, the Secretary was directed to transmit a letter of condolence to Mrs. Heyes on her great loss, and that the same be entered on the minutes of the Society.

A vote of thanks to the President for his services in the chair terminated the proceedings.

GEO. MORGAN, *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

THE ordinary meeting was held on January 17th, 1879, the President in the chair.

The SECRETARY showed a specimen of a calculus, the chief constituents of which were a combination of every kind of calculi: viz., oat-hair, triple phosphate, and crystalline. The subject was an aged job-horse, who passed no fæces during six weeks others than he removed. The existence of the calculus was assumed, but could not be detected. On death from rupture the calculus was found to have reached to the commencement of the rectum. He also showed a kitten having a double body and eight legs. He likewise referred to a case in which he had successfully removed the elongated portion of a tooth on one side, and chipped away eleven pieces from another on the other sides by the aid of Thompson's shears. He did not cast the horse.

The PRESIDENT next referred to his experiments for determining the nature of the skin epizootic, and stated that since then an eruption very similar to the disease had developed in the inoculated horse, generally affecting the thighs as well as the selected part; and that in another case the use of a contaminated rug had yielded no positive result. In another experiment, believing that heat and moisture were essential, he had submitted an animal to exertion while clothed with a contaminated rug, when it became the subject of the disease. He had set himself to discover whether there were parasites in the disease, and without speaking too positively might say he had found a vegetable parasite.

Mr. HILL (a visitor) stated he had a number of cases in his district, and regarded it as a low form of "ringworm," treating them with mercurial ointment and Zinc Oxyd; he had also observed it in the stable where there was an absence of heat, and again in horses exercised in a straw yard where they perspired after exercise.

Mr. MOORE, Sen., wished to know from the Chairman when the eruption appeared. So far as he had seen, it much resembled equine pox, and its contagiousness supported that theory. It affected parts where the rug did not lie. Did it as a fact come from America or Germany? The Germans said it came from Switzerland.

In reply, the PRESIDENT said the first change which takes place was infiltration of the dermis in circumscribed areas, followed by superficial inflammation. The absence of constitutional disturbance did not accord with the idea of equine variola, and as horses in their clothing were often taken to different parts of the country, infection was easy. If it could be shown to have been introduced here by American purchasers, as some large buyers say, it would become a matter for the consideration of the Veterinary Department of the Privy Council. It was a fact that its spread and extent were closely related to traffic in Canadian horses.

Messrs. Charles Sheather and Thomas Chesterman were duly elected, and the meeting adjourned. Present nineteen fellows and five visitors.

The next meeting was held on February 6th, at 7 p.m. Mr. Charles Sheather related a case of rupture of the lesser curvature of the stomach—a sequel to Colic. In the later stage of treatment he gave charcoal in a draught, which was returned by the nostrils. He repeated it, and watched the horse. The vomiting continued until death. In the autopsy there was found muscular rupture, and the stomach contents were fluid. The discussion was more on the negative evidence of prior disease the parts offered, and the possibility of vomition. Mr. F. J. Mavor gave an instance of vomition in a horse, followed by recovery, and Mr. Hancock mentioned two others. Mr. Sheather ascribed death to over-distension. Mr. Fleming alluded to instances in which horses die from eating the soil when on the picket-lines, and produced two parcels of pebbles and rough stones which had been vomited and voided by a dog belonging to the Baroness Burdett Coutts, these being constantly swallowed by the animal. One day he was confined and watched, when in the course of twenty-four hours he voided these quantities of stones weighing 9 oz. 1 dram; the dog, which weighed 22 lbs., was alive and well. Mr. Fleming was unaware of any case where so many were passed in so short a time. Professor Pritchard confirmed this statement, having also seen the dog. Mr. Fleming also showed some ancient horse-shoes; one, obtained from York, belonged to an early Roman period, an undulating bordered shoe with a wide cavity for a large-headed nail; a curious fact being that these shoes are all of one size, four inches, which served to prove the smallness of the horses. Other specimens he showed were found deeply buried in Hendon, and dated probably from the thirteenth or fourteenth century. Also another shoe—a barbarous one—terribly concave, he marvelled how it could have been used. Also exhibited a double headed foal (head portion) in which the middle right and left orbits were fused, as it were, but the eyes remained independent. Such monstrosities were common in the cow. The shoes were handed round and well examined—the rough shaped shoe giving rise to some discussion. Mr. A. Charles had a curiosity to show, it being the penis of a whale; he believed there were only two others in the country, they being smaller and deposited in the R.C.S. This measured six feet nine inches, and weighed, being dried, between ten and eleven pounds; its age and history were unknown, it having been brought by a sea-captain; he had no doubt of its genuineness, and should present it to the R.C.V.S. Mr. A. Broad showed the two fore feet of an aged pony which, for five or more years, had suffered from navicular lameness, and had worked until it was destroyed from motives of humanity. The ossific matter was mingled with the fibrous flexor pedis tendon. In the other foot the disease had proceeded to ulceration. He considered the specimen unique.

After the consideration of this specimen, as the evening was well advanced, it was agreed to hold over the President's intended communication, and call another meeting the following week to receive it. The meeting then adjourned. Present seventeen fellows and two visitors.

JAMES ROWE, *Hon. Sec.*

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

ON the 16th January, the half-yearly meeting of the above association was held at the Norfolk Hotel, Norwich, A. H. Santy, Esq., F.R.C.V.S., the President, in the chair. Amongst those who honoured the meeting with their presence, were T. W. Crosse, Esq., F.R.C.S., Thomas Greaves, Esq. (ex-President R.C.V.S.), George Fleming, Esq. (Editor VETERINARY JOURNAL), and J. D. Allman. Esq. There were also present Messrs. F. Low,

G. G. Whincop, L. Butters, W. Shipley, J. D. Overed, E. Barker, W. Ellis, T. E. Augur, F. Case, S. Smith, D. Rattee, H. Buckingham, W. J. Bower, and G. C. Hunting, jun. Letters of apology were received from Professor Pritchard, Professor Williams, Messrs. Cartwright, Hutcheon, Bushman, King, Hammond, Newson, etc. The minutes of the last meeting having been read and confirmed, and the auditors' report received, George Fleming, Esq., was elected honorary associate, and the following gentlemen members of the Association: Messrs. R. Tayler, Colchester; W. J. Bower, Rudham; A. Holl, New Buckenham; S. Barker, Aylsham; H. Buckingham, Harleston; and G. C. Hunting, Halvergate.

The PRESIDENT then read a brief inaugural address, in which (amongst others) the following subjects were introduced and discussed: The Contagious Diseases (Cattle) Act; the supplemental Charter; the Apprenticeship Clause; and the direct representation of the Association in the Council of the Royal College of Veterinary Surgeons, which elicited the warm approval of those present. Thomas Greaves, Esq., was next introduced to the meeting, and that gentlemen read a valuable and able paper on "Germs, their influence in propagating disease, and Disinfectants, their influence in preventing disease, and in modifying its spread." The subject was treated by the essayist in a most scientific manner, and gave evidence of profound and deep research, in which the opinions of the foremost scientists of the day were freely reviewed and criticised. He showed that the theory of germs producing disease had opened up an entirely new field of pathological investigation, which was of the highest possible interest alike to the student of Medical, and Veterinary Science, and although he admitted we were at present only on the threshold of inquiry as to the action of germs, yet nevertheless he predicted, when our knowledge of the subject became more perfect, that most important and valuable results would follow, both as to the treatment, and also (what was of scarcely less importance) the prevention of disease. A most animated discussion followed the reading of the essay, in which Mr. Fleming (the able editor of THE VETERINARY JOURNAL) took part, and contributed much valuable information, both scientific and practical, on this most important and deeply interesting subject, to whom, as well as to the essayist, a cordial vote of thanks was accorded by the members, who were unanimous in expressing a hope that the visit of those gentlemen would be repeated at no far distant day. A similar compliment having been paid to the Chairman and other officers of the Association, the meeting broke up. The members and friends afterwards dined together under the presidency of Mr. Santy, and spent a very pleasant evening.

The President's address and Mr. Greaves' essay are annexed.

J. D. OVERED, *Honorary Secretary.*

THE PRESIDENT'S ADDRESS

Vice-Presidents and Gentlemen,—In opening this, the first meeting in my year of office as President of the Norfolk and Eastern Counties Veterinary Medical Association, I am expected to make a few remarks; but shall content myself on this occasion with as few as possible, and those of a brief nature. Most of you are aware that this association was established just ten years since under the presidency of the late W. Smith Esq., F.R.C.V.S., of this city, and from various causes it slept for eight. My principal object in trying to resuscitate it was to bring members of the profession better to understand each other, and in each other's society on neutral ground to rub off those angles which do occur in professional life; also to enable us to remember that we still are students, and ought to remain such to the end. The ever restless

wave of science shows so many varied hues and forms that it is impossible for any to stand and say, I have learned, I know!

I will draw your attention to a few subjects which I think, as individuals and as a body, require our special attention.

The Contagious Diseases (Animals) Act;
The New Charter; The Apprenticeship Clause;
Direct representation of this Society in the Council;
Consultation with Non-Qualified Men;
Professional Etiquette.

Firstly, with respect to the Contagious Diseases (Animals) Act. It must be obvious to the profession and the Government that it was very necessary to include in the Act the disease known as Swine Plague, it being a most infectious disease killing vast numbers. Not long since Mr. Butters had some correspondence with a Veterinary Surgeon in the North of Scotland, stating that some pigs bought on Norwich Hill had conveyed the disease to a distillery there, and the consequence was that a hundred of the animals fell victims. I am of opinion that Splenic Apoplexy and all Anthracoid diseases should be included in the Act.

In speaking of the new or supplemental Charter, it would be well for young members of the profession not to lay aside their books and studies, but diligently to read the former, and by so doing keep up the latter, that they may attain the higher degree after the prescribed time; for if they neglect so to do, they will not in ten years' time be eligible to become members of the Council or of the Board of Examiners.

The Apprenticeship Clause.—It is very important that no student should be admitted to the Royal Veterinary College, or any of the colleges unless he has been a pupil with some qualified practitioner for two or more years, and prove the same by indentures properly and regularly signed; for no matter how well read, how scientific a man is, or how many degrees a man has, if he lacks practice—that is, if he cannot reduce his knowledge to action and smartly do the numerous operations that present in every day routine, he will not shine as a Veterinary Surgeon. And such proficiency can only be gained by early training, for nothing is likely to cast more discredit on our profession than to see a man perform his duties with a want of knowledge or in a slovenly and bungling manner. If this clause were enacted we might say with "Senex" in THE VETERINARY JOURNAL for December, 1878, that our examiners on the practical Examining Board would be able to sign the diplomas without fear or trembling, equivocation, or mental reservation of any kind.

Direct Representation of this Society in Council.—Would it not be advisable that we as an association should endeavour to be represented in the Council direct, by sending some one we know and who we could depend upon for supporting our views? I am glad to learn that the Royal College of Veterinary Surgeons and the Highland and Agricultural Society of Scotland have come to an amicable understanding. I see nothing now to deter us from soon getting the penal clause if we all put our shoulders to the wheel, if the whole profession rose to its own interests as one man and petitioned Parliament to recognise our rights; for I deem it a disgrace to this country that young men of education and talent are deluded into the idea that they are entering an honoured profession, especially when we have the extended curriculum, and at the end of their training, having reached the desired goal and won the prize, they may find the first time their professional services are required that they are confronted with the horsebreaker or groom vaunting the same distinction as themselves, and discover that the charlatan, plumed with their title, can boast of the patronage and appointment of the nobles of our

land. This cannot exist, if you, gentlemen, and such as you, will unitedly claim your rights, and not allow that apathy to remain which has existed so long amongst us. With respect to professional politics, I would petition that every existing practitioner, not a member of the college, be registered under some n me other than that of a Veterinary Surgeon, and that any one commencing practice under any of the existing names of "Farrier," "Cow Leech," etc., or title of Veterinary Surgeon, not holding the diploma of the college, after a given time, be summarily proceeded against. Then if the public were determined to employ such like, they would do so with the knowledge of who and what they were.

Consultation with Non-Qualified Men.—Are we, as members of a profession, to meet non-qualified practioners and consult; or is it the opinion of the majority that on no consideration are we to countenance them? It is very difficult to draw the line, as many of our clients make a practice of employing such men for minor operations and trivial cases until something turns up which none concerned in expected; we are hurriedly called, and in some cases perforce to consult with the attendant. We cannot refuse when summoned under such circumstances, or if we do perhaps it is a great pecuniary loss. I cannot therefore see our way out of the difficulty under existing circumstances.

Professional Etiquette.—It is most necessary for the great development of our profession that this should be rigidly observed, for if we act as and treat each other as gentlemen, so will the public learn to treat us. I think that meetings of this kind are very conducive to this end; and, finally, may we learn to maintain a Veterinary Surgeon's honour as our own, and be careful not to injure it ourselves or knowingly suffer it to be done by others if we can prevent it, but boldly repel the slanderer of his good name.

Mr. Greaves' Essay.

"Germs," the part they play in the production of some diseases: "Disinfectants," the part they play in preventing and in modifying disease.

Mr. President, Fellows, and Members of my Profession,—Modern science and research unravel many useful problems, make many additions to the comforts and enjoyments of life, and in the domain of medicine and surgery do much to preserve health and battle with disease and death. They have thrown much light on the laws of health; they demonstrate many of those conditions which bring sickness to man and beast; they elucidate the nature of various diseases; and hence ensure greater success in their prevention and treatment. The recent study of germs has especially cleared up some difficult questions in medicine and surgery; in surgery particularly, it has led to great practical results. Those active germs dancing in the sunbeam, swallowed at every breath we draw, endowed with wonderful power of reproduction, the great cause of change or putrefaction in organized bodies, is the subject of my address to-night.

Germs.—These may be said to be matter occupying the border-land between living and non-living things; it is life in an utterly structureless state. The germinal or life-producing matter afloat in the air, out of which bacteria, spores and allied low organism originate, exhibits no characteristics which can be appreciated by the microscope, notwithstanding the employment of lenses that will make a single hair appear a foot in diameter, and an object one inch long 250 feet in length. By such instruments we are enabled to make visible organized bodies which were before wholly unknown, and convince ourselves of the existence of other bodies not yet traced; the tangible has taken to a large extent the place of the intangible; we have a clearer comprehension of how creation is worked and developed. It may turn out

that the atmosphere is much more pervaded by this class of bodies than we imagine ; we are only learning to believe in their abundance, and who knows where our learning will stop. It is apparently true that many of these bodies are of a transparent kind, like a subtle essence, they float in the upper regions, live there permanently, and sometimes come down perpendicularly in air currents whilst they are ready to spring into life.

I am deeply impressed with the conviction that we are but upon the threshold of our acquaintance with these marvellous transformations. It is a new history, a new link in the chain of being. We seem in a certain sense to be living in an invisible world. It seems a distinct landmark to our intellectual advancement ; it shows that there is a generation growing up which is anxious to explore the mystery of science.

A short time ago nothing was known of the life-history of these organisms. We find that in the commonest forms assumed by new-born specks of living matter, they are in a measure indestructible. They can live in and resist a higher temperature than would suffice to destroy developed organisms. These germs then may be likened to an acorn, which, when placed in and surrounded by favourable media, ultimately becomes the stately oak tree. In following out these inquiries we are not pursuing an *ignis fatuus ;* there is no delusion, not a shadow of a doubt about it. The practical point is this : though the air, as air, is pure and innocuous, unfortunately it ever contains suspended in it organic dust, particles and germs, which, when brought into contact with an infusion of moist dead vegetable or animal matter of suitable temperature, such infusion becomes turbid immediately and swarms with living organisms called Bacteria—500,000,000 are assumed to exist in a single drop of stagnant water. It is proved conclusively that this life-giving principle is altogether distinct from the oxygen or any other constituent in the air. It is an essential condition that there must be living germs, or no living organisms can possibly be produced. In some localities they abound to a greater extent than in other localities ; there is no known atmosphere entirely free ; and whenever they come into contact with dead animal or vegetable matter in a fluid or semi-fluid form at a suitable temperature, for which they would seem to have a strong affinity, almost instantly it is perceived that low organisms begin to exist.

In order to give us a clearer light on this subject, it must be borne in mind that atmospheric air consists of oxygen and nitrogen, carbonic acid and aqueous vapour, in definite proportions. The atomic theory shows that these proportions must of necessity be exact, or it would cease to be atmospheric air ; that it presses with a pressure of 15lbs. to the square inch. We know it is a mixture, it obeys the law of diffusion of gases, that is, the atoms are mechanically held together, but that the atoms move upon each other with such facility that anything can permeate it ; a bird can fly through it, rain can pass through it, mists and fogs can be suspended in it. It would appear that these germs are retained in a state of suspension in the interstices between the atoms of the air. This is proved in a variety of ways ; Professor Tyndall has experimented in every possible way for the last two years with nearly ten thousand flasks filled with various infusions. He was determined to recognize nothing that was not tested over and over again with undeviating accuracy ; he found when he exposed these infusions to the atmospheric air in some localities that the infusions retained their transparency, and not the semblance of life took place in them, though they were exposed for weeks and months ; whereas other flasks of the same infusions were exposed to the atmospheric air in other localities, they became turbid and in two days were swarming with bacterial life. There was no doubt or uncertainty about these results ; the conclusion was absolute and imperative that it was not atmospheric air, but something that existed in the atmospheric air, which produced the organisms

observed. Neither did they exist in the infusion itself from pre-existing germs or pre-existing organisms. Now these germs may be quite innocent germs; they may exist in countless multitudes where contagious diseases are unknown as well as where they are rife, but if they are conveyed into the system of an individual who is in an unhealthy state, whose secretions assimilate the infection at the time, they are capable of generating fever and inflammation. I beg you to distinctly understand me, these germs cannot produce Small-pox, Typhus Fever, or Cattle Plague; they must not be confounded with the germs of infectious or contagious diseases; these latter germs can only emanate from organisms suffering under those special diseases. These latter may be transmitted by the breath of an affected person, or by the exhalations from the skin, or from the various excretions. The contagion of some contagious diseases is so subtle that the breath of the diseased organism contains numbers of potent particles of poison, and in this manner the air of a considerable space or even district may become infected with the living diseased germinal matter. This material substance we call germs; they pass from the diseased to the healthy organisms, there they thrive and multiply and produce their kind as all living things do, and that nothing that does not live has been proved to be capable of doing; it is therefore living matter. This living poison may be introduced into our bodies in the air we breathe, in the water we drink, in the food we eat, or by the pores of the skin.

There are material poisons which do not change or increase in their virulence, such as arsenic and the like compounds; but if the 100,000th part of a grain of the living poison is preserved, if even a single seed is allowed to rest undisturbed in some congenial nest, although it may not germinate at once and may lie hid for months or years, yet at the end of that time whenever the season or circumstances become favorable to its development, it may suddenly spring into life, begin to grow, and if unchecked it will rapidly spread abroad and carry destruction and death through entire stables, and even whole districts. Some authors affirm that whenever material or mineral poison is taken into the system in excess, viz., to the verge of destroying life, in a constitution of great strength of vitality, its effects upon the system, although not fatal at the time, are such that sooner or later death must result from it; but if the poison be of a vegetable nature or germs of disease, the dose or doses taken to the verge of destroying life, if the constitution is strong and can live it out at the time, the constitution will rally, and all traces of the poison, or effect of the poison will sooner or later entirely disapear. But this is not always the case; as an example, Mr. Henry M. Stanley, the African explorer, is now laid up in Paris suffering from the effects of malarial fever caught in the swamps of Africa years ago; he is yet thin and weak, and recovers so slowly that he is despondent at times of ultimate convalescence. I have said that infectious disease can be taken by inhaling the germs floating in the air; nor can this be wondered at if we only contemplate the extremely delicate texture and intricate mechanism of the lungs. When we find that in ordinary breathing about 20 cubic inches, or two-thirds of a pint of air enters the lungs of a man at each inspiration, that one or two thousand gallons of air are brought daily into contact with the blood, the whole of the blood in the body is presented to the air in the course of less than a minute of time about one thousand times a day, the air passes over these soft flexible bags called air-cells formed of a membrane 3000th of an inch in thickness, not much thicker than the film of a soap bubble (the lungs of a full-grown person, physiologists inform us, contain six hundred millions of them); by a process of endosmosis the oxygen (and in all human probability, germs also) enter the blood, they are at once embarked in a number of little vessels called corpuscles, 3000th of an inch in diameter (physiologists tell us there are over three millions of them in a single drop of blood). As to the minuteness of some

of these organisms met with, I may mention that the organisms of the pollen of flowers, which produces hay fever, are so small that it would require thrity-seven millions to weigh one grain, or six millions of particles of pollen of our English meadow grasses. These minute organisms and the white corpuscles of the blood are known to be capable of passing through the walls of capillaries.

(*To be continued.*)

Army Veterinary Department.

Gazette, February 18.

ROYAL ARTILLERY.—Veterinary Surgeon of the First Class J. Ferris is placed on temporary half-pay.

Gazette, February 28.

VETERINARY DEPARTMENT.—Veterinary Surgeon First Class William Hall, from the 1st Dragoons, to be Veterinary Surgeon First Class, dated March 1st, 1879.

Gazette, March 14.

VETERINARY DEPARTMENT.—John Thomas Dibben, gent., to be Veterinary Surgeon on probation, in succession to Veterinary Surgeon First Class G. Evans, M.D., promoted from Royal Artillery: dated March 15, 1879.

Gazette, March 21.

VETERINARY DEPARTMENT.—Veterinary Surgeon First Class W. A. Russell, ftom the 14th Hussars, to be Veterinary Surgeon First Class.

In India First Class Veterinary Surgeon A. E. Clarke has been detailed for duty with the Kuram Field Force. Veterinary Surgeon W. A. Crow has been ordered to Mean Mear for duty with the Royal Artillery.

During the recent military operations in Afghanistan, the loss in animals has been extremely great, and we can scarcely wonder at this when we know the difficulties the different columns had to encounter, and the almost entire absence of veterinary organization. It appears to be impossible to get the Indian authorities to recognize the necessity for this important organization either in peace or during war, and their neglect is likely to cause the country heavy loss, in addition to the delay and embarrassment it has already occasioned in the field operations. There are nothing but complaints on every side as to the way in which veterinary surgeons are treated in India, and as a consequence, service in that country is avoided as much as possible. Volunteers there certainly are none, nor are there likely to be until affairs are greatly altered.

The Indian papers have taken up the subject, and have commented in strong terms on the state of the Veterinary Department in India, and the absence of volunteers for service in Afghanistan. One paper, in the course of its observations, says: "The 'only one' officer alluded to who has volunteered for Indian Service, is First Class Veterinary Surgeon Steel, 16th Lancers, who on landing finds himself told off to executive work usually allotted to the juniors of his department, while there is no administrative Veterinary officer with the Division to which he is attached. In the Continental armies there is always an administrative Veterinary officer attached to each Division in the Field, but in India it does not seem to be worth while to do this. No attempt, however, has been made to supply the Divisions with administrative veterinary officers, and the Royal Veterinary Warrant, published in England in April last, is still a dead letter in India."

The Indian Government does not appear to be very enlightened with regard to the requirements of modern armies, and it is fortunate indeed that it has only uncivilized, undisciplined hordes of Afghans to contend with. But even then the preventable losses sustained—not to mention the cruelty inflicted on animals through lack of veterinary supervision and assistance—do it no credit. Closer contact with Russia, and the lessons derived from the present campaign may, however, eventually rouse it to a sense of its duty and the necessity for attending to its Veterinary establishment.

Obituary.

THE Registrar of the Royal College of Veterinary Surgeons reports the following deaths :—

Mr. Robert Page, of Bishop Morchard, Devon, who graduated in 1836.

Mr. Matthew B. Brake, M.R.C.V.S., of Northampton, a graduate of 1845.

We have been much pained to receive intelligence of the death of Mr. T. J. Lang, First Class Veterinary Surgeon, Royal Artillery, who died at Peshawur, *en route*, we believe, to the Afghan frontier. Mr. Lang left England for India only a few months ago.

Notes and News.

TRICHINOSIS IN GERMANY.—TRICHINÆ IN PORK.—According to a report just issued by the Prussian Minister of Agriculture the number of pigs slaughtered in the Kingdom of Prussia in 1878 was rather more than two millions. Of this number the official inspectors of meat found that one in every 2,800 was affected with trichinæ. This showed a considerable improvement on 1877, when as many as one in every 2,000 pigs were suffering from *Trichinosis*. Trichinæ had also been discovered in American salt pork and in the smoked uncooked sausages of Brunswick. There had been several outbreaks of the disease among the inhabitants of several provinces and cities where uncooked ham, bacon, or sausages, or underdone pork had been eaten. The frequency of this dangerous and agonising malady has continued to engage the attention of the Imperial Government of Germany, which intends shortly to bring before the Imperial Parliament a measure to insure a more stringent microscopical examination of all pigs slaughtered. The number of persons known to have suffered from Trichinosis in the same year was 138.

RINDERPEST AND SMUGGLED CATTLE.—The *National Live Stock Journal* states that an Austrian landed proprietor, and member of the Austrian Parliament, in a speech in that assembly, said :—At Elizabethgrad, in Russia, you find 15,000 to 20,000 head of horned cattle collected in one point—healthy, suspected, and diseased, all thrown together. From this market the cattle are sold to Austria, while the diseased cattle are smuggled over the frontier. And that it pays to do so is proved by the fact that in Galicia there exists an anonymous insurance society, with a capital of more than a million florins (500,000 dols.), for the insurance of diseased cattle smuggled into Austria.

FILARIA SANGUINIS IN THE DOG.—We have on several occasions alluded to the occurrence of the *Filaria sanguinis* in the dog in tropical and semi-tropical countries. In the *Lancet* for March 1st, Sir J. Fayrer publishes a letter from a medical gentleman, which may be of interest to our readers, in connection with the subject of blood entozoa.

Medical History and Post-mortem of a Terrier Bitch at Rassa Station Hospital, Sunghie Ugong, Straits Settlements.

History.—Weight 30 lb.; age 4¾ years. Had four litters of pups; was supposed to be in pup five weeks; had good health up to the time of fatal illness; owner noticed a tumour come and go away again in her neck for three years. Symptoms: Looked dull, and had paroxysms of coughings and attempts to expel stomachic contents for three hours before death; did not succeed in ejecting pulmonary or gastric matters; snapped once when placed in a hot bath. On the same day she wheeled completely round, then fell on her side, breathing convulsively, and died in ten minutes.

Post-mortem examination.—Unduly clothed in fat. Veins of neck engorged and full of clots; tracheal tube healthy and free from foreign body. Lungs congested (venous); specific gravity, however, unaltered, sections floating in water; when cut the surfaces exuded frothy serum and mucus. Œsophagus healthy; no foreign body found, as expected. The cardiac extremity contained a little pulpified food; stomachic contents similar. Mucous membrane and rugæ well defined; hollow viscera healthy (examined to rectum). Peritoneum healthy, but loaded with fatty bands. Liver slightly congested; venous channels dissected for some distance, blood-clot alone found. Kidneys congested. Brain not examined. Arteries generally found empty, veins free of blood-clot (recent). Lungs with heart attached removed from thoracic cavity. Ascending and decending cavæ followed up for some distance, blood-clot alone found. Heart: right ventricle exposed, crammed with recent clot and long white worms; on close inspection the worms were found in close connection with clot and not the endocardial lining. Right ventricular cavity twice the size of left; walls half as thick. No attenuation detected. The clot with worms attached reached about one inch up pulmonary artery. Also in right auricle blood-clot with a large ball of worms were found. Left side of heart nearly empty; no worms there detected, nor in any other part of body.

Causes.—No doubt drinking impure still water, rich in animal and vegetable organisms.

Remarks.—The worms were derived from without, and had an extraordinary affinity for right heart, and though they had no distinct connection with the endocardial lining, they were unaffected as to position by blood's current. No symptoms in life ever indicated embolism or thrombosis; no symptoms of ill-health observed from their accumulation; no pulmonary uneasiness. Queries: How is it they did not migrate? Why did their existence never produce subjective symptoms before the fatal attack? Why is the right heart their habitat? Womb, unimpregnated, 1½ in. long, 1 in. broad at fundus. The worms were about 2½ in. long, like threads, and rolled together in a round ball-like accumulation. They were sent for microscopical investigation, were neglected, and lost.

Correspondence, etc.

OUR FEES.—HONEST COMPETITION.

To the Editor of the VETERINARY JOURNAL.

SIR,—I shall feel greatly obliged if you will give insertion to the following correspondence in your next number.

Camden Town, N.W.,
February 6th, 1879.

DEAR SIR,—Will you kindly be present at the meeting of the Central Veterinary Medical Society this evening, as I propose to direct the attention of the society to a personal matter in which you are interested. If you will

bring with you the letter addressed by Professor Simonds to Mr. Reddin, referred to in the VETERINARY JOURNAL for January, I should esteem it a favour.

I am, etc.,

Mr. T. Moore. J. WORTLEY AXE.

11, Upper Berkeley Street, W.,
February 8th, 1879.

DEAR SIR,—I am in receipt of yours of the 6th inst., in which you ask me to attend the meeting of the Central Veterinary Medical Society, and bring the letter written by Professor Simonds to Mr. Reddin.

A most regrettable cause prevented me attending the meeting; but had I been present I should have objected to your entering into the subject, as the rules of the society prohibit any discussions of the kind. It appears to me that you ended the personal matter, as between ourselves, by needlessly handing my letter of December 18th, 1874 to the Principal of the Royal Veterinary College, instead of replying to it yourself, and I must therefore, at this distant date, decline to accede to your request to re-open it.

I am, etc.,

Professor Axe. THOMAS MOORE.

P.S.—I shall send this to the VETERINARY JOURNAL.

In your last number, "A Student" contributes an exceedingly puerile and vulgar tirade against myself. I am sure his time would be better occupied in attending to his legitimate studies, and I would recommend him to master the controverted points instead of heedlessly rushing into print to expose his ignorance.

I am, etc.,

February 15th, 1879. THOMAS MOORE, M.R.C.V.S.

[We regret that the above correspondence was pressed out of our last issue, in consequence of the great demands upon our space. Willing, indeed anxious, as we always are to allow every one to express himself freely with regard to matters relating to the profession, and especially with a view to the exposure and suppression of abuses, it must nevertheless be obvious that our correspondents must observe the rule which excludes the introduction of too acrimonious and personal attacks, which do not promote, but rather hinder, the redress of wrongs and grievances. "Honest Competition" has, for the present at least, been sufficiently discussed.—ED. *V. J.*]

GREENACRE *v.* CARLTON.

To the Editor of the VETERINARY JOURNAL.

SIR,—I have read with interest the case of Greenacre *v.* Carlton, decided in the Wymondham County Court; but it loses a great deal of its importance as regards Veterinary Jurisprudence, by not giving more details to show how Messrs. Holl and Auger, Veterinary Surgeons, arrived at the conclusion mentioned. I, for one, will feel much obliged if they would give more particulars.

Yours faithfully,

Edinburgh, *March*. W. REEKIE.

"RIG" CASTRATION.

To the Editor of the VETERINARY JOURNAL.

SIR,—As there has been a great deal of talk about the castration of "Rig" horses, which subject has been lately brought under our notice by Mr. Miles, I have taken the liberty of making a few remarks on it. In my opinion,

every veterinary surgeon should be able to perform this operation. Some practitioners may say that they do not see why we should trouble ourselves about it, because they have been in practice for many years, and have not suffered much inconvenience by not being able to do it. Most likely not, simply because it was thought that the operation could not be performed; and if a person had a troublesome "Rig," he used to get rid of him at any price. But now it is shown to us that the operation can be performed, we should not rest till we can do it; for most likely unqualified men will learn how to perform it, and if they can do it and the fully qualified men cannot, it will tend to lower the veterinary profession in the eyes of the public. I sincerely hope, however, that all of us would do our uttermost to raise our profession, instead of lowering it. Now I daresay some will ask, How are we to learn how to perform this operation? My answer to this question is, Either find it out for ourselves, which I think can be easily done, or pay some one to teach us. But before going any further, I may mention that having had a good opportunity of seeing the operation performed, I watched the whole process very carefully; though I do not feel justified in stating how I think it is done till I have tried to perform it, which I intend to do at the first opportunity, and if successful, shall be very pleased to make it known to the profession at large. I have heard it stated by Mr. Miles, and also by members of our profession (who, I think, should know better than make such a statement), that it is of no use our trying to perform the operation, as it is impossible to do it without having similar instruments to those used by Mr. Miles. In answer to these people, I will simply say that the operation must have been discovered some time; and whoever first discovered it, I don't hesitate to say, did not use similar instruments to those now in use by Mr. Miles, simply because Mr. Miles has invented many of the instruments he uses, since he has performed the operation. Therefore I don't see any reason why a veterinary surgeon, knowing the anatomy of the parts, should not be able to do it with a little practice, and this can be obtained at a very low cost, either by buying "Rig" horses from the knackers (and when he has done with these, he could sell them to the knackers again for as much, or nearly as much, as he gave for them); or if he cannot get horses in this way, he may know of some one who has a very troublesome "Rig" which he can buy for a very low sum. Then if his operation was successful, he could sell this horse for more than he gave for him; and even if not successful, the animal would not be much the worse for the operation, and he could then sell him at some price. If not successful in his first endeavour he should not be discouraged, but think of the old motto, "*Labor omnia vincit*," and try again.

I noticed in the last number of your Journal a letter on this subject by a certain veterinary surgeon, who, when speaking of the operation as performed by Mr. Miles, says: "the way in which the missing testicle was brought to light was something wonderful." He almost seems to think that there is some kind of magic about the operation; but for my part, I do not see anything very wonderful in it, as I think that, in the majority of cases, the testicle is lodged in the inguinal canal. There are some other operations performed by Mr. Miles, such as "spaying" cows and bitches, which I think quite unnecessary. The latter operation is not only unnecessary, but extremely cruel; and a good deal could be written about such operations, and also that of "spaying" pigs, which from my own practical experience, and also from that of others, I do not hesitate to say is quite unnecessary. But I must not encroach more on your valuable space, for my letter is now much longer than I intended it to be.

I remain, yours respectfully,

"CUI BONO."

THE "FELLOWSHIP DEGREE,"

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I am quite pleased with the letter from Mr. Cox in the JOURNAL of this month and in *The Veterinarian* of last month. The Council of the R.C.V.S. have a most important duty to perform, yet a pleasing one; for they will hand their names down to posterity as being the leading labourers to dig the Veterinary profession out of a quagmire in the nineteenth century: that is, if they do their duty in an honest, impartial manner.

The Degree should certainly be the means to mark its possessor as a fit associate for gentlemen; therefore those admitted should have that culture which develops manners, which maketh man, and man a gentleman.

The matriculation examination, as it was in the first instance, certainly took too high a standard for those in our ranks at this present, and undoubtedly needed modifying. Yet to lower it to such a level that the most moderate member may compete for the Fellowship is certainly throwing the Degree about indiscriminately. Of what value will it be to such men? *None whatever;* and it will only bring contempt down upon those who sign such diplomas as examiners. The Fellow must be a man of superior stamp, one who can present himself as an educated scientific man when in the company of such men, and be able to hold his own in arguments on matters scientific and intellectual pertaining to our profession, or the sister science.

If the examiners fail to obtain this much, then the Degree will fail; therefore it is to be hoped that the Council will give the subject deep thought, and Mr. Cox's letter the attention it deserves.

The matriculation examination of students before entering our schools should, I opine, be conducted under the supervision of the Council, or, better still, an Education Committee; thus allowing a student who may so desire to pass the higher examination for admission to the Fellowship examination after he has had his five years' actual practice. And, moreover, if such a committee existed it would prove a valuable means for preventing the scamps and dregs of humanity from drifting into the profession; for, as matters are now, anything in the image of man possessing 35 guineas can enter the schools, and then, after years of cunning and craftiness, manage to burrow through into the R.C.V.S. either at London or Edinburgh. This should be put a stop to; for how can we expect the profession to attain its true position when such recruits are enlisted? No Charter, Act of Parliament, or Fellowship Degree can make anything else of such men than what they are; neither can these Charters, Acts, etc., make those already with us gentlemen. Unless the foundation be soundly laid and the material of fair quality, the fabric must be wanting in stability.

A meeting of Fellows would be a good innovation—happy thought of Capt. Russell.

I would therefore suggest that a meeting of Fellows be held on the day of the Annual Meeting, at Freemason's Tavern, immediately after that meeting, and a discussion be held on the subject. Those Fellows who feel desirous of maintaining the degree in its integrity and original value, will greatly oblige by notifying the same in a letter enclosing card addressed F.R.C.V.S., care of publishers of THE VETERINARY JOURNAL.

It is to be distinctly understood that Fellows alone are invited.

Yours truly,
ROBERT WARD, F.R.C.V.S.

London, W. *March 18th*, 1879.

P.S. The notice of Meeting will appear in the JOURNAL and *Veterinarian* for May.

CIRRHOSIS OF THE LIVER.

To the Editor of the VETERINARY JOURNAL.

SIR,—In reading over the communication on "Cirrhosis of the Liver" in the Journal for this month, I see that the dose of the subchloride of mercury mentioned is three drams, instead of one dram, the quantity used. Be good enough to give a corner in the Journal for the ensuing month for this correction, to prevent any misunderstanding.

Balloun, Beauly, I am, sir, faithfully yours,
March 12th, 1879. ALEX. GUNN, V.S.

NOTICE TO CORRESPONDENTS, ETC.

SEVERAL Original Communications, as well as reports of Societies, are unavoidably held over until next month.

In consequence of the heavy demands upon our space, we would esteem it a favour if Secretaries of Societies would condense their reports as much as possible, in order to ensure early publication.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from G. Morgan, Liverpool; "Cui Bono;" "Madrassee;" G. A. Banham, Brown Institute; G. Gray, Bakewell; W. Reekie, Edinburgh; J. Webb, Bishop's Stortford; D. Hutcheon, Liverpool; A. E. Macgillivray, Banff; S. Locke, Manchester; R. Poyser, Carabineers, Umballa; T. R. Dudgeon, Sunderland; T. Greaves, Manchester; R. Ward, London.

BOOKS AND PAMPHLETS: L. C. Miall and F. Greenwood, *Anatomy of the Indian Elephant*; G. Thin, *On the Condition of the Skin in Tinea Tonsurans*; G. P. Sanderson, *Thirteen Years among the Wild Beasts of India*; Karl Graff, *Vergleichende anatomische Untersuchungen über den Bau der Hautdrüsen der Haussäugthiere und des Menschen*; O. Bollinger *Ueber eine neue Wild- und Rinderseuche.*

JOURNALS, ETC.: *Wochenschrift für Thierheilkunde; Index Medicus; Annales de Méd. Vétérinaire; Archives Vétérinaires; Lancet; Sanitary Review; Recueil de Méd. Vétérinaire; Allgemeine Militär-Zeitung; Journal of the National Agricultural Society of Victoria; Bulletin de la Réunion des Officiers; United Service Gazette; Farmer; Agricultural Gazette; Deutsche Zeitschrift für Theirmedicin; National Live Stock Journal; Medical Times and Gazette; American Veterinary Review; Der Thierfreund; Der Thierarzt; Nature.*

NEWSPAPERS: *Suffolk and Essex Free Press; Montreal Gazette* (2 copies); *Edinburgh Courant; Coventry Herald; Stockport Advertiser; Asian Sporting Paper.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded, addressed to the Editor, VETERINARY JOURNAL, Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.